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To Clean Light Colored Kid Gloves.

The common burning fluid (turpentine and alcohol mixed) used in lamps, is the best liquid that can be used to clean kid gloves. Put the glove on the hand to which it belongs, then dip a small piece of clean sponge in a little of the liquid,—which may be poured into a cup for convenience—and rub all the spots on the glove until the grease and dirt are removed from it, then take it off and lay it down upon a piece of white paper. Do the same with the other glove, and then suspend them both over a clean cord. and dry them in a cool place. While drying they must be stretched a little from time to time, to prevent their shrinking. Those who make a business of cleaning gloves, dry them upon artificial hands, but these are not positively necessary. Care must be exercised not to clean gloves in this manner by candle light, or in the neighborhood of a fire, as accidents have taken place to persons by the ignition of the gas of the fluid.

Improved Heater.

The improvement illustrated by our engraving is intended for the heating of churches, stores and dwellings. Water is employed as a medium for distributing the heat of the fire over a large radiating surface. The apparatus consists of a large water-tight iron chest or box, A, having hexagonal air tubes, B, passing through. These tubes are each divided into a number of compartments by radial plates, the ends of which are shown in the cut, presenting the appenrance of stars.

The fire is applied directly to the bottom of the furnace, and the products of combustion are carried off in the rear of the apparatus, and escape at pipe C. The cold air to be heated is introduced at the back, and passes through the hexagonal tubes, in the direction of the arrows, and rises from their front ends to the top of box A, whence it is conducted to the desired apartments from pipes D. The box, A, and tubes are placed on a slight inclination, so that the air will the more readily be drawn through the tubes.

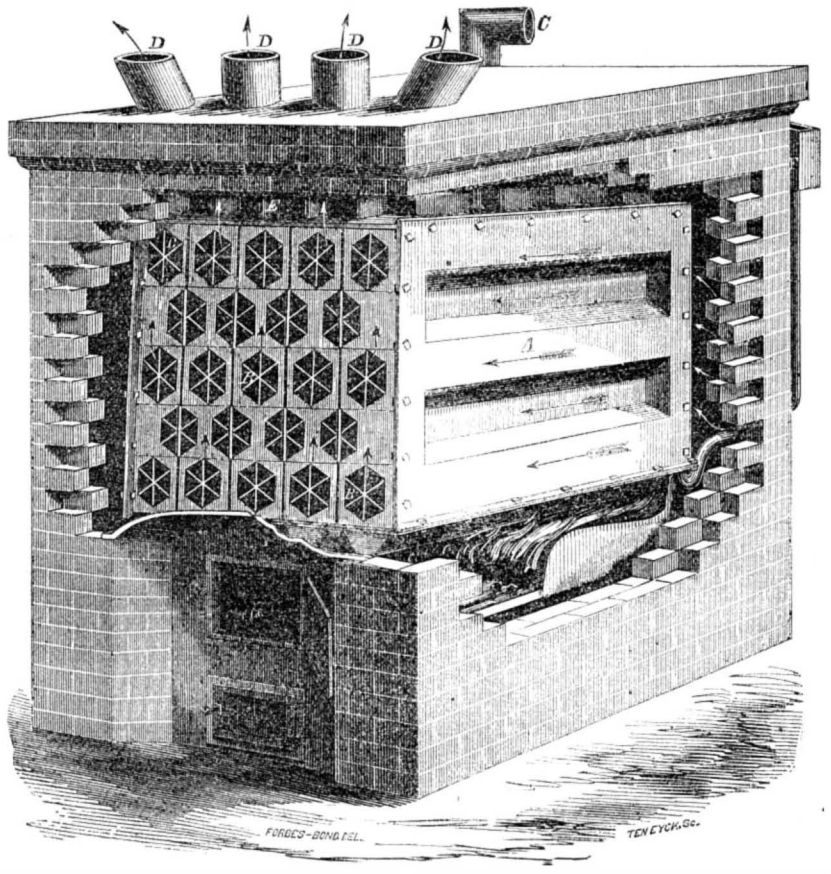
The radial plates run longitudinally through the hexagonal tubes. The object of said plates is to augment the radiating surface, and thus to heat the air more thoroughly, as it passes through the tubes. Thorough experiment has demonstrated the great value of these plates, and they are regarded as an important feature of the improvement. They add greatly to the heating power, because the air, being a non-conductor or non-absorbent of heat, all of the radiant heat passes through it without being absorbed. The air, therefore, goes on until it strikes some solid substance hotter than itself, by contact with which it becomes warmed. The top of the box, A, is covered with radiating leaves, E. F is the water tank.

It is universally conceded that hot water apparatuses are the safest and best means of warming apartments of any that have been devised. Except under pressure, the air can never be heated above 212°, and it is always loaded with a sufficient degree of moisture. The ordinary hot air furnaces are liable to become over-heated, and the air vitiated by decomposition, before entering the room. A lack of moisture is also often experienced. These objections do not exist where water is used as the distributing medium for the heat of the fire. On the contrary, the air being only heated to a comparatively low temperature, more of it is thus required to be thrown into the apartment. A larger amount of fresh, warm healthy air is thus necessarily obtained than can be expected from the other systems above named.

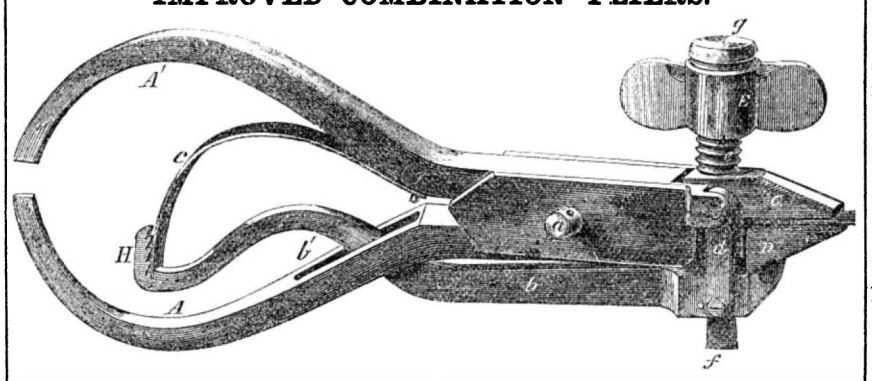
The expense of hot water furnaces has heretofore formed a serious obstacle to their introduction. But in this improvement it does not exist. By a peculiar method of uniting the joints, the various parts are all cast in sections and bolted together, so that they form a water-tight and durable whole, the cost being no greater, if as much, as the ordinary furnaces. This is an important fact. The inventor has provided attachments for the supply of water, and a regulation for the draft of the furnace. But these are not shown in our cut. They are simple and self-acting.

Simplicity, durability, economy of fuel in use, ease of management, and abundance in its supply of warm, pure air, are the prominent characteristics of this improvement. It should be carefully examined by all who have occasion to employ heating fixtures. Patented by Leeds & Smith, 1854–55. For further information address A. W. Rand, 83 North Sixth st., Philadelphia, Pa.

IMPROVED HYDRAULIC FURNACE.



IMPROVED COMBINATION PLIERS.



Improved PHers.

This invention consists of a peculiar combination of parts into a tool, which may be used as pliers, or as a hand vise, or as callipers.

A A′ represent the two curved or bowed legs of a pair of callipers, which are connected by a pivot, *a*,. To the upper end of the leg, A, there is attached a jaw, C, formed precisely like the jaws of ordinary pliers, and D is a jaw which has a shank, *b*, attached to its lower end, the lower end of said shank passing through a slot, *b*′, in the leg, A. A spring, *c*, is attached to the leg, A′ bearing against the lower end of the shank, *b*. The jaw, D, is connected by links, *d*, to the upper end of the jaw, C. To the outer side of the jaw, C, and at its ower part, there is attached a screw, *e*, which projects outward, or at right angles with the jaw, C. This screw has a nut, E, upon it. The screw, *e*, is hollow, and a rod, *f*, passes through it, and through the lower part of the jaw, C, one end of said rod being attached to the jaw, D, and the opposite end having a head, *g*, upon it.

By compressing the two legs, A A′, together, the two jaws, C D, will move towards each other in parallel positions, the spring, *c*, forcing the legs and jaws apart when the legs are relieved from the pressure of the hand. By turning the nut, E, outwards, the nut, in consequence of bearing against the head, *g*, will draw the jaws together, and also the legs, A A′. By turning or securing the nut E inwards or towards the jaw, C, so that sufficient play is allowed, the implement may be used as a pair of pliers. Thus it will be seen that pliers, callipers, and a hand or thumb vise are obtained, all combined in one tool.

One prominent advantage of this tool is, that the jaws always move horizontally when they open or close, and thus present greater convenience and security in grasping an object. The jaws of the common pliers present a tapering form when opened, and consequently cannot be applied, with much firmness, to any article, unless it is a tapering or conical figure.

The spring, *c*, answers two purposes, viz.: throws open the pliers, and counterbalances and prevents what little tendency there may be in the jaw to sag. The power of the spring may be increased by raising its lower end into the higher notches at H. This is a very excellent improvement, adapted to a multiplicity of useful purposes. Patented June 10, 1856, by Wm. Hart, Mayville, Dodge Co., Wis., of whom further information can be had.

Chinese Artificial Breeding of Fish.

This art, which has lately been introduced with great success for ichifying the rivers of France, Scotland and Ireland with salmon and other fish, and claimed as a recent discovery, has been practiced in China for centuries. We find a record of this in a work published thirty years ago. In it is stated that "the Chinese fishermen carefully collect the spawn of fish and put it into the shell of a fresh hen's egg then stop up the opening, and set it under a sitting fowl. After a certain number of days they break the shell in water warmed by the sun; the young fry are soon hatched, and are kept in pure fresh water until they are large enough to be thrown into ponds. The sale of spawn for this purpose forms an important branch of trade in China."

The River Amoor.

This magnificent river, which runs through the lower part of the Russian possessions, and empties into the head of the Gulf of Tartary, is navigable seventeen hundred miles from its mouth to the city of Northink, the capital of Southern Siberia. The country is densely populated, and great results are anticipated by some adventurers, who propose opening a communication between our Pacific possessions and the Russian Asiatic territory. Two successful voyages from San Francisco to this river have already been made, and the steamship *America*, the first of a line of steamers to run between these points, cleared port on the 10th of June last.

Old Tanned Hides.

A few weeks since while a man was digging potatoes at Lynn, Mass., he struck a hard substance, which was found to be the board cover of a vat, or a pit, and from which he hunted out a large quantity of tanned leather, in excellent condition. It was ascertained that a tannery had many years ago stood upon the spot, and had been burned down. For sometime past the ground has been cultivated, and it is supposed the leather must have been in the vat at least seventy-five years.

Keeping Flies off Gilding.

The London *Builder* states that the meat market at Ghent, Belgium, is now completely free of the intolerable nuisance of flies. The simple remedy is the inner walls having been painted with laurel oil, (*Oleum lauri nobllis* ?) the smell of which the flies cannot support. Even gilt frames can thus be preserved unsoiled. The smell of the laurel oil is not unpleasant, and one easily gets accustomed to it.

The Russian Government is about to despatch a scientific expedition to circumnavigate the globe.

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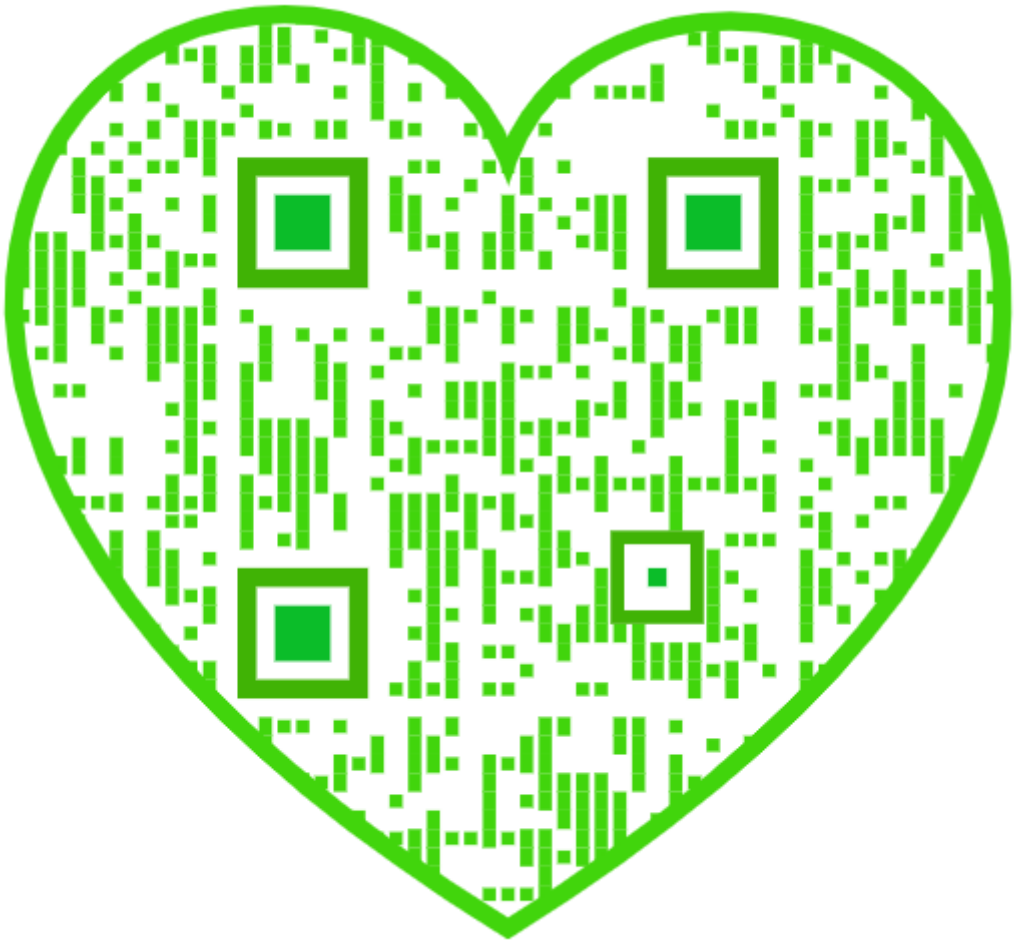

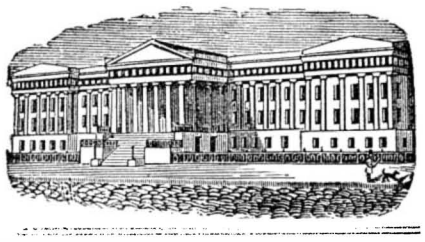

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 19, 1856.

PRESSING GLASS.—H, W. Adams, of New York City: I claim the mold, composed of the several parts specified, combined and operating substantially as specified.

LIME KILNS—Levi Averill, of Elmira, N. Y.: I claim the construction and arrangement of the kiln, with small separate branches, attached outside or around a single furnace, from which the heat is conducted through converging passages to several points of their peripheries, substantially in the manner and for the purposes set forth.

FURNITURE POLISH P. Brabyn, of New York, N. Y.: I claim the combination of muriatic and acetic acid with the usual ingredients of furniture polish, in the proportions and manner substantially as specified, for the purpose of producing a polish capable of resisting the action of hot or cold water.

PLASTER COMPOUND—Lewis Buckholds of Richmond Va.: I claim the composition and application of the ingredients mentioned, whether in the ratio described, or in any other substantially the same, in the manner and for the purposes substantially as specified.

COUPLING PIPES—Geo. Fetter, of Philadelphia, Pa., and J. S. McClintock, of Libertyville, Ill.: We do not claim, exclusively, the enclosing of the ends of lead pipes, in a tapering ferrule of metal harder than lead, for the purpose of attaching connections thereto, and the use of right and left-handed screws on such connection.

But we claim the tapering screw terminating in a smooth and rounded end, on the connections for the purpose of guiding the said screw, and preventing the lead from burring up inside the pipe, in combination with a tapering ferrule on the end of the lead pipe. said ferrule having any convenient number of projections for preventing the pipe from turning within the ferrule, while the end of the said connection is being screwed into the pipe.

FARM FENCE—E. D. Foss, of Mainville, Ohio: I distinctly disclaim all and each of the several devices used in the construction of portable fences, which have been in common use and have been patented.

But I claim the vertical shifting base post, in combination with tha arrangement and use of the tenons, as set forth.

KNIFE CLEANERS—Wm. W. Hopkins, of Chesterfield Factory, N. H.: I claim the reciprocating scourers, e f g, and elastic bolster, D, arranged as shown and described, for the purpose set forth.

PADDLE WHEELS—Abraham Houseworth of New York City: I claim the floats or buckets, D D, applied or attached to the wheel, as shown, and expanded or spread and contracted, or closed by the cams, F G, arranged as shown and described.

ADDING NUMRERS—I. G. Hubbs, of New York City I do not claim the scale of numbers inserted in the spaces formed by the spiral and radial lines on the dial, C, as that is known and used.

But I claim the disk, E, with its continuous spiral tooth, the racket index, H, and the indicator, I, substantially as and for the purposes set forth.

SWEEPING GUTTERS—Wm. H. King (assignor to himself and Isaac Hyneman,) of Philadelphia, Pa.: I claim the combination of the skewed revolving brush and guiding board, arranged, located, and operating together substantially as described, for the purpose of making a side or gutter sweeping machine, that will leave the sweeping in the windrows, as set forth.

BRACES FOR CARRIAGES—F. A. Jewett, of Abington, Mass.: I claim combining with a thorough brace a right and left threaded screw, working in the nuts, e f, substantially as described, whereby the thorough brace can be tightened, and the slack taken up at the same time, as set forth.

CUPPING INSTRUMENTS—Sherman McLean, of Reynales Basin, N. Y.: I claim constructing the cup, B, with one or more smaller cups, D, fitted and secured within it, and provided with perforated sides, substantially as described.

HARVESTING MACHINES—L. L. Moore, of Petersburg, Va: I claim adjusting the frame on its supporting wheels for cutting higher or lower, by uniting the frame and tongue by means of the pivoted hounds, E, screw winch, F, and pin, a, passing through a slot in the rear of the tongue into the standard, C, the above parts being arranged and operating in the manner and for the purposes set forth.

PRESSING BONNETS—Wm. Osborne, of Louisville, Ky. I do not claim any of the separate parts set forth.

Neither do I claim pressing or forming a separate flaring face piece, or a separate crown piece for bonnets, or for bonnet frames.

I claim forming the flaring face piece and side crown of a bonnet or a bonnet frame in one piece, and at one operation, substantially in the manner set forth, and irrespective of the particular form of the bonnet or frame.

FORGING HORSE SHOE NAILS—Charles Parkhurst & Chas. Weed, of Boston, Mass.: We claim making the nail guider, M, movable up and down with respect to the anvil and its top and lateral hammers, when said anvil is made stationary, as specified, said improvement being advantageous in several respects.

We do not claim moving the nail guide, M, towards the cutters, P Q.

We claim the combination of mechanism for operating said nail guide, or moving it from the anvil to the cutters, and retaining it between the cutters during the descent of the vertical slider, L, far enough to separate the nail from the rod, said combinations consisting of the lever latches, R and W. the eccentric, S, the rocker lever, N, and the springs V and X, applied to the guide tube, M, and the vertical slider, L, constructed and operating essentially as described.

TENONING MACHINE—John Potter, of Ellicottsville, N. Y.: I claim the combination of the revolving knife cutter heads, c d, and rotating saws, a b, when these devices are arranged in relation to each other, and for operation together as shown and described, causing the knives of the cutter heads to relieve the saws from binding, and insuring many other advantages in the cutting of the tenon, as specified.

Further, I claim the alternate arrangement on the cutter heads, c d, when operating in specified relation to and connection with the saws of the square and level nosed knives or cutters, s s', for action with each other, and the saws, in the formation of the shoulder, as set forth.

BRISTLE SEPARATOR—Adonijah Randel of New York City: I claim the vibrating board, J, and discharging rollers. L L M M, arranged and operating as shown, for the purposes specified.

DOOR SPRING—John Broughton, of Chicago, Ill.: I claim the employment of an additional hinge, C, unfolding and folding the reverse of the hinges, a, and having formed on each side of its leaves, a quadrantal or other suitable projection, in combination with the flat or other suitable springs, D D', substantially as and for the purpose set forth.

SASH SUPPORTER—C. S. Bruff, of Baltimore, Md.: I claim the application of the described rack corrugated in the particular form described to one edge of a sash, and the metal spring catching into said corrugations secured in the jambs, or on the stop bead, as described, for the purpose of holding up window sashes at any desired elevation.

CONCENTRATION OF MILK—Gail Borden, Jr., of Brooklyn, N. Y.: I am well aware that sugar and various extracts have been and are now concentrated in a vacuum, under a low degree of heat to prevent discoloration and burning.

I am also aware that scalding milk, to improve its preservative qualities, has been long known, and that it has been kept in hermetically sealed vessels, I do not claim these processes.

I am also aware that William Newton, and many others since, have obtained patents for concentrating milk by various modes of evaporation, and combining it with sugar to render it soluble and preservative. I do not claim this as my discovery or invention.

But I claim producing concentrated sweet milk by evaporation in vacuo, substantially as set forth, the same having no sugar or other foreign matter mixed with it.

HAND STAMP—E. A. Russell, of Hookset, N. Y.: I do not claim the combination of a movable stamp carrier or lever, with an inking bed, and a bed for supporting a piece of paper or any article to be printed, the stamp being moved by one hand of a person alternately from one bed to the other, and driven downwards by a blow from the other hand of such person, or a hammer held therein as I am aware that such a hand press or stamp is not new.

But I claim combining with the movable lever or stamp carrier, E, and beds, B and C, a mechanism substantially as described, whereby, during and by the lateral movements of the said lever or stamp carrier from one bed to the other, the stamp shall not only be struck or forced downwards, but raised off the same, in the manner and for the purpose specified, such mechanism being a trip hammer with its operating spring, and cam, L, and a spring, G, constructed and made to act with respect to the stamp, and its carrier, substantially as stated.

CART SADDLES—H. A. Rains, of Nashville, Tenn.: I claim uniting the tree bars and pads of a saddle by providing said bars with grooves around their edges, or with grooved rims, and the linings of the pads with looped, corded, or perforated borders, which are firmly but removably secured in the grooved edges of the tree bars, by wires, cords, or bands passing through or around said loops or borders, and held by right and left hand screws or equivalent fastenings, substantially in the manner and for the purposes specified.

CLAMPING AND UPSETTING TIRE—O. L. Cowles, of Tecousha Township, Mich., and Allen Le Deming, of Homer Township, Mich.: We are aware that machines have been in use for clamping and upsetting tire by the use of levers and screws for that purpose requiring several distinct motions by hand to effect it, and we therefore do not claim clamping tire or iron for the express purpose of upsetting it when so clamped.

But we claim the combination of the lever, fig. 1, with the auxiliary clamping levers, D D, fig. 2, the carrying sheds, E E, the connecting bars, F F, the saddle piece, H, and the slotted clamping bars, A A, for the purpose of clamping and then upsetting tire by a single continuous motion of the slotted lever, fig. 1, as set forth.

REGULATING VELOCITY OF FEED FOR SAW MILLS—R. Eickmyer, of Yonkers, N. Y.: I claim driving or operating the log carriage by means of two shafts, I G, placed more or less out of line with each other, and connected by a pin, h, and grooved plate, I. or draw link, j. or any equivalen, device, for the purpose of giving a desirable movement to the carriage, thereby feeding the log to the saw, as described

WINDOW SASH—Graneir Sessions, of Worcester, Mass. I do not claim the principle of connecting two pieces of metal, by casting metal on both while they are in a mold.

Nor do I claim making a window of separate bars united by brazing, soldering, or riveting them together, when they abut against one another.

But I claim the described new or improved combination or manufacture of window sash, as made not only of rebated and tenoned side and cross bars, but of separate rebated corner pieces or combinations cast in manner as specified on the tenoned ends of said bars, and not only constituting rebated angular continuations thereto, so as with said bars to complete the sash frame, but serving to connect the bars together, in manner as explained.

ARRANGEMENT OF STEAM CYLINDER—J. S. Shapter, of New York City: I do not claim inclosing a steam cylinder in a steam boiler, as that is known and used.

But I claim enclosing a steam cylinder in a steam chamber separated from the body of the steam boiler, where the supply of steam can be shut off from the chamber by a valve for that purpose, and where the cylinder and its attachments can be got at through a man hole, when the supply of steam to the chamber is so shut off.

VALVE MOTIONS FOR STEAM ENGINES—E. S. Renwick, of New York City: I claim the combination of the parts of a valve motion, substantially in the manner described, so that the steam valves shall be opened by mechanism at intervals coincident or thereabouts with the opening of the exhaust valves, and that the steam valves shall be closed by mechanism that is independent of the exhaust valves, but which governs and controls the toes by which the steam valves are opened, in such manner that the closing of the steam valves does not change the angular position in which these toes have been placed to open the valves.

Second, I claim the combination of the steam toes, G G', rock shafts, J J', arms D D' D2, and link L, with the exhaust rock shaft, I, for opening the steam valves.

Third, I also claim the combination of a cam and spring cam box, with mechanism for imparting the movement of the cam box to the valves.

Fourth, I claim the combination of the yokes, K K, and shaft M, with appropriate operating mechanism, depending on the movements of the crank shaft of the engine for holding the steam toes in the proper position to open the valves and for lowering the same bodily to close the steam valves.

Fifth, I claim closing steam valves that have been opened by moving the steam toes or their equivalents bodily, without changing their angular position, the distance required to shut the valves.

PROJECTILES—Nathan Scholfield, of Norwich, Conn' I claim the application of wings, as described, either with slight springs to force them from close contact with their seats, when left free, so as to allow the air to act thereon to perfect their expansion, or by having a free passage for air beneath the wings, and giving them a slight inclination diagonally, on the cylindric surface and without springs.

I claim the construction of the guiding wings for a projectile to be fired from a gun of thin sheets of metal, having one of their edges folded around a piece of wire or its equivalent, to form journals on which the wings may turn as joints.

I also claim applying these wings, either plane or curved, on the cylindric surface of a projectile, and either parallel to its axis, or diagonally in such form and position that the said wings may be closed down on the cylindric surface or on grooves thereon, fitted to receive them, and by the action mainly of the air on the wings as the projectile is discharged, they shall be opened and expanded, as described.

I also claim the construction and application of these wings slightly curved, composed of metal possessing elasticity to resume their curved form after being changed therefrom, so that if while its rear end rests on its seat, the forward end of the wing is elevated therefrom when free, then if this end is also pressed down to its seat, it shall be raised again by its elasticity when left free from pressure, so that the action of the air on the exposed curve of the wings will force them open to their greatest capacity, after being discharged from a gun.

BEDSTEADS—J. H. Belter, of New York City: I claim a bedstead constructed of thin parts, A A, supported independently without posts or joints, when the parts are composed of veneers, and arranged substantially as described and for the purposes set forth.

I also claim the wedge-shaped projections, B B, on the inside face of each part of the hollow notches, B' B', on the edge of the internal frame, C, when combined substantially as described and for the purposes specified.

CARPENTER'S GAUGES—Joel Bryant, of Brooklyn, N. Y.: I claim point holders, or holders for the points, markers, and cutters of the gauges, irrespective of the kind and form of gauges, or instruments equivalent thereto, constructed and operated as described.

WHEELS FOR CARRIAGES.—Thomas Brownfield, of George's Township, Pa.: I claim the rim of the hub, which is made in sections, which being constructed in this manner, will press on all the spokes, and hold them all firm in the hub, and the iron plate which covers these sections which will band and let the sections fit the spokes, with the pressure of the screws and hold the sections in their places, and the nuts on the spokes, which hold the fellies and tire to their proper places.

WASHING MACHINE—John S. Shepler, of Beaver, Pa.: I do not claim the half cone rubbers, nor do I claim concave rubbers.

But I claim the forming of ribs in sections parallel to the rubbers, and gradually forming a double inclined plane out of any odd number of ribs, thus causing a wedge shape opening between the ribs of equal opening when vertical to each other, to admit the clothes, as the machine rotates back and forth, without the abrupt contact caused where the ribs are of equal hight, as set forth.

HEAD REST FOR R. R. CARS—William B. Slaughter, of Chicago, Ill.: I claim the yoke set forth, together with its mode of attachment to the person, and the combination of the hand rest with the yoke, in the manner described, so that it can be attached to the person and made to serve the purpose of a head rest, without any other attachment, substantially as set forth.

HARVESTERS—William Tinker, of Kellogsville, Ohio: I do not claim, irrespective of the relative arrangement of their cutting edges to the finger bar, and their action, as specified, the reciprocating back cutting projections over or through the fingers between the finger bar and sickle.

And I am also aware that a sickle has been provided with back scraping projections, presenting parallel sides or edges, and moving crosswise to the traverse of the machine on or over the plain surface of the sickle bar. Such, therefore, I do not claim.

But I claim forming the cutting teeth, d, with narrow back projections, e, having cutting edges parallel to each other along the sides of each projection, so as to cut at right angles to the face of the finger bar, when said projections are arranged for operation over the fingers between the finger bar and sickle, as specified, in combination with the wiper wheel driving appliance for giving an abrupt action to said cutters for the better clearance from grain or grass of the space which separates the finger bar and sickle, as set forth.

VISE—R. W. Thickens, of Brasher Iron Works, N. Y.: I do not claim the cross levers or bars, E E, separately, for they have been previously used.

But I claim the combination of the levers or bars, E E, and slotted arm, D, arranged and applied to the jaws, A B, as shown, for the purpose specified.

SELF-CLEARING CHIMNEY COWL—Charles H. Watkins, of New York City: I claim one or more legs, H H, having the circle of the revolving top, B, and connected with a common spindle, C', as described and set forth.

WATER-PROOFING TEXTILE FABRICS — Benjamin Weigert, of New York City: I claim the treatment of textile fabrics with a solution of acetate of alumina and glue, prepared in the manner and from the ingredients and proportions stated, and for the purpose specified.

GRAPPLE FOR RAISING SUNKEN BODIES—Greenleaf A. Wilbur, of Skowhegan, Me.: I do not claim the use of a buoy or buoy chain to indicate the position of sunken bodies.

But I claim the improved construction of the grapple to be operated with a buoy and staple, in the manner and for the purpose substantially as set forth.

BORING ARTESIAN WELLS—Clarendon Williams, of Franklin, Mo.: I claim the boring of earth and stone and sinking of tubing at one operation, forming artesian wells, by the mechanism employed, consisting of screw, F, and nut, G, arranged and operating in the manner described, with the auger, constructed substantially and operating in the manner set forth.

SWAGING IRON—John T. Willmarth, of Worcester, Mass.: I claim mounting the hammers on opposite sides of a rocking frame, operated by eccentrics, or their equivalents, substantially as specified, in combination with the anvils placed on opposite sides of the axis of vibration of the said rocking frames, as described, and for the purpose specified.

LOCKS—Hjalmar Wynblad, of New York City: I am aware that eccentric disks and ward plates have been before known and used, and I do not claim them.

But I claim the arrangement of a series of eccentric disks separated by stationary ward plates, with each of said disks having an orifice at the center of its motion, fitted to the shape of the bits of the key, and moving upon and guided by a segmental standard, and moved at the same time and to the same distance within a frame attached to and working the bolt of a lock, as set forth.

BLEACHING IVORY—A. C. Breckenridge, (assignor to Julius Pratt & Co.,) of Meriden, Conn.: I claim providing the bleaching frame with grooved strips of glass, C C and D, to receive the ends or sides of the pieces of ivory exposed to the sun's rays, whichever side of the frame is upward, substantially as described.

DRILLING AND DRESSING STONES—Wm. M. Barton, (assignor to himself and Robert M. Barton,) of Russellville, Tenn.: I claim the arrangement described of the drill, a, on one side of the slab or stock, A, and the crank, F, and connecting rod, J, on the other, with the spring, T, and vibrating arm, L, to connect the said drill and connecting rod, as set forth.

MOSQUITO CANOPY—Levi J. Henry, (assignor to Benjamin J. Hart,) of New York City: I claim the construction of the clamp, b c, with the rod, e, and screw studs, 1 and 2, by which the canopy frame may always be made to stand vertically, whether the clamp itself stand vertically or horizontally, as specified.

I also claim the cap, f, fitted to receive the bars, 8 and 9 9, for sustaining the canopy or covering, when combined with the sliding tubes, 3 4 5, for regulating the hight of said canopy, and also receiving the bars, 8 and 9 9, when transported, substantially as specified.

WHEELWRIGHT'S MACHINE—A. D. Stewell, (assignor to John A. Prall,) of Fulton, N. Y.: I claim the combination of the spoke set with the carriage, carrying the hollow auger, when the whole is attached to the hub while resting over the pit, as set forth.

EXTRACTING OILS—Charles Moore, of Trenton, N. J.: I claim the process of extracting oils and other liquids from the pulp of prepared or ground linseed or other seeds or substances.

I claim forming it or them into cakes, by molding and partially pressing or packing it or them, substantially as described, for the purposes set forth.

ROCK DRILLS—Wm. M. Barton, (assignor to Robert M. Barton and himself,) of Russelville, Tenn.: I claim the combination of the segmentally toothed wheel, H, gearing into the ratchet wheel, I, with the spring, L, and its drum, M, when their parts are arranged as set forth.

MAGNETO-ELECTRIC MACHINES—Edward Shepherd, of New York City: I do not claim the helices, the connecting bands or rings, p' n', the connecting rods, the fratteur plates, or the springs, F or G, individually.

But I claim the springs, F and G, the fratteur plates, P, the connecting rods, r' r'. and the conducting bands or rings, p' n', when these are combined with helices in sets of four, said helices being united amongst themselves, and by their terminal wires with the rings, p' n, or their mechanical equivalents, so as to collect and aggregate in one current the several currents generated in the said helices when resolved between the magnetic poles, as set forth.

RE-ISSUES.

REAPING MACHINES—Jonathan Read, of Alton, Ill Patented March 12th, 1842. Extended March 12th, 1856: I claim the combination of the reel for gathering the grain to the cutting apparatus and depositing it on the platform, with the seat or position for the raker, located and arranged substantially as described, to enable the raker to ride and rake the grain from the platform, and free the reel and cutting apparatus from obstructions.

REAPING MACHINES—Jonathan Read, of Alton, Ill. Patented March 12th, 1842. Extended March 12th, 1856: I claim, in combination with the main frame of the machine, hung or balanced on the supporting wheels, with the thills or tongue by which the horses draw the machine, hinged to the said frame, a lever connected with or acting upon one and extending to the drivers' stand or seat on the other, so that the driver, who is the sole conductor of the machine, may, from said stand, by this arrangement, raise or depress the cutter at pleasure, during the operation of the machine, for cutting grain at any suitable hight about the ground, or for passing over any intervening obstacles, substantially as described.

HARVESTING MACHINES—Jonathan Read, of Alton, Ill. Patented March 12th, 1842. Extended March 12th, 1856: I claim the arrangement of parts, whereby a clear space is obtained, and the grain discharged between the platform, and the path of the driving wheels before the latter has passed the discharged grain, as set forth.

REAPING MACHINES—Jonathan Read, of Alton, Ill Patented March 12th, 1842. Extended March 12th, 1856 I claim, first, the sickle with its cutting edge, when both are scolloped and serrated.

Second, reserving the serrations on the edge of the sickle, in short sections, substantially as set forth.

Third, constructing the guard fingers in the shape of a spear head, for the purpose of affording a shoulder on each edge, against which the grain will be held, thus counteracting its tendency to slip from the action of the sickle and forming an acute angled space in front of the edge of the sickle, to render the severing of the grain more easy and certain.

REAPING MACHINES—Jonathan Read, of Alton, Ill. Patented March 12th, 1842. Extended March 12th, 1856: I claim, first, the combination with the platform of a reaping machine of a mechanical rake, which traverses said platform at intervals, and draws off the grain gathered thereon, substantially as set forth.

Second, the combination with a mechanical rake of the roof or screen described, or the equivalent thereof, to intervene, and keep the gavel of grain collected on the platform separated during its discharge by the rake from the grain just cut, and falling towards the platform, thereby avoiding the scattering and entanglement which takes place when the grain is passing off, and that falling upon the platform are not kept separate.

Third, the combination with the roof or screen of a mechanical rake, of a stripper or guard, P' or P'', or its equivalent, to sweep from the screen any grain which may have fallen upon it during the passage of the rake to and fro over the platform, as described.

Fourth, constructing the platform with slats or ribs for the grain to lie on, and intermediate spaces for the teeth of the rake to run in, to pass below the grain, and thus avoid all danger of overrunning and imperfectly discharging it, as set forth.

DESIGNS.

COOKING STOVES—N. S. Vedder, (assignor to Cox, Richardson & Boynton,) of Troy, N. Y.

COOKING STOVES—N. S. Vedder and Ezra Ripley, (assignors to Cox, Richardson & Boynton) of Troy, N. Y.

PARLOR STOVES—David Hathaway, (assignor to Cox, Richardson & Boynton,) of Troy, N. Y.

One Cord of Wood on a Locomotive.

Our excellent cotemporary the *Railway Times*, Boston, gives an account of a locomotive called the *Mississippi*, built by Rogers, Ketchum & Grosvenor, Paterson, N. J., which run 125 miles on the Pacific R.R.—Missouri—with one cord of wood. It also states that the average run of a locomotive on the N. Y. and Erie Railroad, is only 26 miles to a cord of wood.

In the account given of the performances of the *Mississippi*, it is stated that it run the 125 miles in seven hours—that the train consisted of three passenger cars, containing 106 passengers, one baggage car, and Adams & Co.'s Express and baggage car. It is also stated that 45 miles of the track was an ascending grade of 45 feet to the mile, and 80 miles from 20 to 10 feet per mile.

It appears to us that this feat is not so very great. The size of the train and the speed must all be taken into account in judging of the economy of fuel in locomotives. The average speed of the *Mississippi* was only about 18 miles per hour, while the average speed on express trains, on the N. Y. and Erie Railroad, is 35 miles, or about double that on the Pacific Railroad, and the trains on it are also usually far heavier and larger. For a double speed, it requires at least four times the quantity of fuel, we understand; therefore, if we take the greater speed, and great weight of trains on the N. Y. and Erie Railroad into consideration, 26 miles per hour with one eord of wood, may be as economical as one cord for 125 miles on the Pacific Railroad.

Gas on Steamboats.

The Buffalo (N. Y.) *Commercial* states that a steamboat was recently fitted up with an apparatus to make its own gas, but it has proved a failure—the smell was too offensive. There must have been some defect in the apparatus for making gas on board of that boat. It is very difficult to neutralize a disagreeable odor which is generated in making gas. Still, this can be done by proper apparatus, especially if crude rosin oil be used to generate the gas, as is done in many cotton factories.

Mine Water for Boilers.

The Pottsville *Journal* states that Messrs. Mangay & Trucks have introduced a method of purifying mine water, by which the acids are removed, and it is made pure and soft as rain water, and so rendered fit for using in boilers, without the destructive effects usually attending the use of mine water in eating away boilers.—[Philadelphia Ledger.

Curious Experiment.

At the Royal Pahopticon, in London, a thin band of wire is bent or shaped into the form of a word or a sentence and then placed on a sheet of white paper. A powerful battery is discharged through this wire, which melts and oxydates it, and there is left in its place the word or sentence, plainly visible, of a black color.—[Exchange.

[The paper may be white in appearance, but it must be impregnated with some substance, such as tannin, to produce this result. The oxyd of a wire will not make a black mark on unprepared white paper.

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On Water Wheels.

MESSRS. EDITORS—Permit me to make a few remarks in relation to the communication of Messrs. Collins & Gilbert, on page 251. You were surprised at their statement, that a wheel "would pass 150 per cent. of its area." But in the "Essay on Turbine Water Wheels," page 246 Vol. 9, SCIENTIFIC AMERICAN, article 28, headed, "The Velocity of the Wheel," an explanation of the cause is given. In fig. 6, accompanying that essay, however, a large C near the arrow in the flume, is omitted by the engraver, but it is referred to in the first line below it.

At the close of a long sentence, which is somewhat ambiguous, Messrs. Collins & Gilbert say, "the results as given in the article, will, in all ordinary cases, be found to be altogether too high, for though we are aware that an aperture may be constructed which will pass 100 per cent. of its area, we know that one of the same size may be constructed which, from its form and location, will not pass more than 50 per cent. of its area." This, strictly speaking, is incorrect. Any aperture, properly so called, will pass at least 62 per cent. of the theoretical discharge. Nevertheless, by appendages, we may reduce the discharge to 50, 20, or even 10 per cent.; or, by plugging it up, reduce it to nothing. Why was the passage of the water through the guides and issues of a turbine water wheel dragged into the discussion of the quantity of water that passes through an aperture, or over a notch board? Was it to let your readers know that Messrs. Collins & Gilbert make turbines with polished guides? I understood your object to be to give rules by which the quantity of water flowing over a notch board or through an aperture, could be measured; and that you had no reference at all to its passage through a wheel. For the information of the gentlemen, I will state that no well constructed turbine will pass quite 100 per cent. of the theoretical discharge, when running at a speed to produce a maximum effect. But to return.

Most attempts to give rules for determining the quantity of water flowing down a stream in a given time, leave their data quite inexplicable to common millwrights; and the results are not to be relied on under all circumstances. The quantity of water is generally greater than that indicated by the rule. All rules for determining the quantity of water that flows over a notch board, in a given time, are based on the known velocity acquired by bodies falling through a certain space in vacuo near the surface of the earth, which, in the latitude of New York, is 8·04 feet per second, acquired by falling 1·005 feet. But 8 feet per second acquired by falling 1 foot, is near enough the truth for all practical purposes. Now, if the actual discharge of water from under a head, equalled the theoretical, as the velocity is as the square root of the head, by multiplying the square root of the head by 8, and into the area of the aperture, we would have the quantity discharged per second. But it is known that when the orifice is pierced through a thin plate, the actual discharge is only 0·625 of the theoretical. Hence, as 1 is to 0·625, so is 8 to 5, 5 is the co-efficient that is commonly used. And, as the velocity is double when issuing from under four times the head, it follows, that if the aperture reach to the top of the head, forming a notch, that the average velocity will be two-thirds of that at the bottom of the notch. Hence, two-thirds of the quantity must be taken when water flows over a notch board. And as there are 60 seconds in a minute, which, multiplied by 5, is 300,—two-thirds of which is 200,—if the area of the notch be multiplied by the square root of its depth in feet, and by 200, it will give the cubic feet of water discharged per minute.

Many circumstances, however, may tend to cause the actual quantity passing over a notch to be greater that obtained by calculation. If the board be of considerable thickness, if the inner corners of the notch be rounded off, or if the notch bear considerable proportion in size to the canal in which it is placed, so that the flow of the water in the canal gives it a motion before passing over the notch, which is usually the case when it is placed in the tail race, the actual quantity passing over the notch will be greater than the calculated quantity.

Owners of water power should attend to these things when having the power of their wheels tested, or they may be deceived; their wheels may consume much more water than interested wheel builders may lead them to believe. J. B. CONGER.

Jackson, Tenn., August, 1856.

[We stated in the remarks referred to by Mr. Conger, that we did not suppose, with the *same area* of openings, there could be a difference of discharge, varying from 150, 125, 90, 80, 73, and 50 per cent. in different wheels. The experiments of Rennie, published in the Philosophical Transactions of the Royal Society, with an opening in a brass plate 1-20th of an inch thick, gave a co-efficient of 0·600 for rectangular openings, 0·633 for round openings, and 0·594 for triangular openings. The rules given on pages 216 and 224, for measuring the quantity and velocity of falling water, have received the approbation of our millwrights generally for simplicity and clearness of description.

Faraday on Silvering Glass.

On page 363 we published the receipt of J. Fitzpatrick describing a simple method of silvering glass, but every new improvement relating to this beautiful art is of general interest. We therefore give below an extract from a lecture of Prof. Faraday, recently delivered before the Royal Society, in which he explained with experiments, Mons. Petitjean's silvering process. The extract is taken from a brief report of the lecture in the *London Mechanic's Magazine*:—

"M. Petitjean's process consists essentially in the preparation of a solution containing oxyd of silver, ammonia, nitric, and tartaric acids, able to deposit metallic silver either at common or somewhat elevated temperatures. 1540 grains of nitrate of silver being treated with 955 grains of strong solution of ammonia, and afterwards with 7,700 grains of water, yields a solution to which, when clear, 170 grains of tartaric acid dissolved in 680 grains of water is to be added, and then 152 cubic inches more of water, with good agitation. When the liquid has settled, the clear part is to be poured off; 152 cubic inches of water to be added to the remaining solid matter, that as much may be dissolved as possible, and the clear fluids to be put together and increased by the further addition of 61 cubic inches of water. This is the silvering solution No. 1. A second fluid, No. 2, is to be prepared in like manner, with this difference, that the tartaric acid is to be doubled in quantity.

"The apparatus employed for the silvering of glass plate consists of a cast-iron table box, containing water within, and a set of gas burners beneath to heat it. The upper surface of the table is planed and set truly horizontal by a level. Heat is applied until the temperature is 140° Fah. The glass is well cleaned, first with a cloth, after which a plug of cotton, dipped in the silvering fluid and a little polishing powder, is carefully passed over the surface to be silvered, and when this application is dry it is removed by another plug of cotton, and the plate obtained is perfectly clean. The glass is then laid on the table, a portion of the silvering fluid poured on to the surface, and this spread carefully over every part by a cylinder of india rubber stretched upon wood, which has previously been cleaned and wetted with the solution. In this manner a perfect wetting of the surface is obtained, and all air bubbles, &c., are removed. Then more fluid is poured on to the glass until it is covered with a layer about 1-10 of an inch in depth, which easily stands upon it, and in that state its temperature is allowed to rise. In about ten minutes, by the heat of warm water the hollow box of the table, silver begins to deposit on the glass, and in fifteen or twenty minutes a uniform opaque coat, having a greyish tint on the upper surface, is deposited. After a certain time, the glass employed in the illustration was pushed to the edge of the table, was tilted that the fluid might be poured off, then washed with water and examined. The under surface presented a perfectly brilliant metallic plate of high reflective power, as high as any that silver can attain to; and the coat of silver, though thin, was so strong as to sustain handling, and so firm as to bear polishing on the back to any degree, by rubbing with the hand and polishing powder.

"The usual course in practice, however, is when the first stratum of fluid is exhausted, to remove it, and apply a layer of No. 2 solution, and when that has been removed and the glass washed and dried, to cover the back surface with a protective coat of black varnish.—When the form of the glass varies, simple expedients are employed, and either concave, convex, or corrugated surfaces are silvered, and bottles and vases are coated internally. It is easy to mend an injury in the silvering of a plate, and two or three cases of repair were performed on the table."

Spontaneous Ignition of Sawdust.

The number for August of the *Journal of the Franklin Institute*, contains a report on the spontaneous ignition of a wooden box containing sawdust.

It occurred in the factory of Joseph S. Elkington & Sons, Philadelphia. A mass of sawdust which had been confined for nine months in a wooden box around a tank for rendering grease, was observed to be heated like a mass of live coal, ready to burst into flames, although it was 40 feet from any fire. The tank which it surrounded was of boiler iron, heated by steam at 50 lbs. pressure, and was 280° Fah. The heat was applied from 6 to 9 hours in succession, and the apparatus was used two or three times per week. When the fire was first discovered, an inch board forming part of the box was burned through. In 1853, the factory of Mr. Elkington was burned down, and this discovery has led to the inference that the cause of that fire was the spontaneous combustion of such a box.

The Committee of the Franklin Institute, in their report on this case, mention several well-known instances of spontaneous combustion of wood, kept in long contact with surfaces heated by hot water.

In 1848, Day & Martin's Blacking Factory in London came near being burned down by the spontaneous ignition of a wooden casing surrounding tubes containing hot water; and it was also found, on examination, that wherever these tubes touched the flooring the latter was charred.

The following extract from the report we recommend to the general attention of all concerned; it deserves a wide circulation:—

"There can be but little doubt that the sawdust in the case before the Committee, exposed at intervals for nine months to a temperature of about 280 Fah., became charred by the gradual distillation of the water and volatile matters of the wood. Charcoal thus formed at a low temperature is much more inflammable and hygrometric than that made at higher temperatures.

"Whether such charcoal will absolutely inflame under 300°, the Committee is not able to say; it is possible that the rapid absorption of large quantities of oxygen by it would produce sufficient elevation of temperature to cause actual combustion. The fact, however, is established, that such combustion will occur under the circumstances indicated, and is of importance, from the liability to recurrence of the accident under like circumstances, as in the cases of joists running near flues or through hot air chambers, wood-work on steamboats near the boiler, steam drum, or smoke stack, jacketing of boilers in ordinary situations, &c.

The Committee believe that the attention of builders and others should be called to the fact, with the object of avoiding the risk, and thus diminishing the causes of fire, already too numerous."

Sawdust boiled for 15 minutes in a liquor containing one pound of plaster of paris to the bushel, then dried in the sun, will be rendered perfectly proof against spontaneous combustion, like the above cited case. This would be a cheap and simple method of treating all sawdust designed for non-conducting packing around hot water or steam pipes.

It is less tiresome to walk than to stand still a given length of time, for in walking, each set of muscles is resting half of the time, but when standing still all the muscles are continually exerted.

Recent Foreign Inventions.

Precipitating Salts from Solution.—L. J. F Margueritte, of Paris, has taken out a patent for precipitating salts from their solutions by sending a current of chlorohydric acid into the solution. If, for instance, it is stated, a current of this gas is let on to a saturated solution of chlorides, such as potassium or sodium (common salt,) these two salts will be almost entirely eliminated from the liquid.—The chlorohydric acid gas will settle the salt in the solid state, thus dispensing with vaporizing of salt water, &c., to obtain the salts.

This invention will be efficient in substituting a more expensive for a less expensive method of obtaining salts from water either by artificial heat or that of the sun. Water, no doubt, has a great affinity for chlorohydric acid gas, and will unite with it rapidly, thus allowing the salt (chloride of sodium) to separate and crystalize; but then it is more expensive to make and use hydrochloric acid for this purpose than to use fuel for vaporization.

Manure from Scrap Leather.—G. Chisholm, of London, manufactures artificial manure from scrap leather, by first submitting the scraps to the action of hydrochloric acid gas at a high temperature, until they are saturated with it, then subjecting them to the action of carbonate of ammonia, also in a state of gas. This latter alkaline gas neutralizes the acid gas, the leather then crumbles to powder and makes an excellent manure. Sole leather scraps are steamed after they are acted upon by the two gases. Such manure will contain but little, if any, phosphate of lime, but will be rich in nitrogen. It cannot, however, be manufactured cheaply.

Smoke Consumer for Steam Boilers.—J. L. Jeffree, of Blackwall, London, has secured a patent for placing at the back of the fire-box of tubular marine boilers hollow flattened pipes, which communicate, through air flues, with the atmosphere. These tubes become hot and heat the air which flows in to mix with the smoke from the fires, thus supplying it with sufficient oxygen to promote perfect combustion and consume the smoke. It is applicable only to steamers using bituminous coal.

Manufacturing Iron.—C. J. Hampton, England, patentee. The improvement claimed by this inventor is the use of soda or other alkaline salt in combination with lime in the puddling furnace. The alkaline salt is dissolved in water, and the solution is then mixed with quick-lime, to slack it, and in this state it is introduced into the puddling furnace. It is stated that it greatly improves the quality of the iron.

C. Sanderson, of York, Eng., has also obtained a patent for improving iron. It consists in the use of the sulphate of iron (copperas) by adding it to cast-iron when in a molten state, which, he states, causes the discharge of earthy matters from the iron, thereby purifying it of deleterious substances, which impairs its strength. The sulphate of iron in a pulverized condition, is added in small quantities—about a pound to 500 lbs. of iron, and stirred. It re-acts upon the silicon, phosphorus, and arsenic that may be in the iron, and cause them to separate from it, in scum. Castings of iron treated in this manner are stated to be superior in strength. Any of our iron molders can try an experiment with the copperas, and satisfy themselves of its merit.

New Old Paddle Wheels.

The last number of the London *Mechanic's Magazine* contains an illustration of an improvement in paddle wheels, for which a patent has recently been obtained in England, and we recognize it as one of the oldest plans tried. The object is to keep the paddles vertical, by having them swinging on axes, with their lower halves made heavier than their upper parts.

New Kind of Bread.

At a late meeting of agriculturists at Tiptree Hall, England, a quantity of bread was handed round which was made of wheat flour and Mangel Wurzel, (white beet) mixed in equal proportions. The bread is spoken of as a very palatable article of its kind, while it has the great merit of being less expensive by half than the ordinary bread, and quite as nutritious.

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New Inventions.

Bad Barometers.

There is no instrument more useful than a good barometer. It indicates changes of the weather before the eye can discern the signs of their approach in the heavens, and on this account it is a premonitor of atmospheric changes. It has saved many ships from being engulfed in the ocean by its warnings of the coming tempest when the sky was clear, thus enabling the sails to be reefed and made snug in due season.

The barometer consists of a column of mercury about 33 inches long supported in a glass tube, with a cup at its foot, by the pressure of the atmosphere. According as the pressure of the atmosphere varies, by winds, moisture, &c., the column of mercury rises and falls in its tube. The instrument, however, may be so poorly made as to be no better than a defective watch, which cannot be trusted in keeping record of "passing time;" and we suppose such instruments are often sold for reliable barometers.

A correspondent writing to us from Indiana, states that he purchased a barometer last spring, for the purpose of warning him of approaching changes of weather, but he has been completely deceived by it. The tube of it is 33 inches long; at 31 1-2 inches it is marked "very dry," at 31 "very fine weather," at 30 1-2 "fine weather," at 30 "changeable weather," and at 28 1-2 "stormy." Instead of this instrument indicating such changes, the mercury in the very finest and dryest weather only stood at "fine weather," and in the worst storms it only fell to "changeable weather." And as if joking with disaster, it indicated only "changeable weather" during a storm that blew off part of the roof of his house, swept off the roofs of several barns, and prostrated many huge trees. The range of his barometer in all these changes was only half an inch.

We bring these facts before our readers for the purpose of warning all those who intend to purchase barometers to be careful, and to purchase only from reliable parties. Every instrument should be tested thoroughly by its makers before it is sold, as scarcely two are exactly alike in their operations. If the bore of the tube is rough, it causes friction, and the mercury adheres to its sides, and does not indicate the correct pressure of the atmosphere; and this may be the reason why our correspondent's instrument fails to operate properly. The mercury of some instruments may also be much adulterated, and thus contain another source of error; but it is not possible to detect these defects in examining an instrument when about to purchase one; hence the necessity of being careful in purchasing such instruments of reliable manufacturers.

Inspector's Report of the Explosion on the Empire State.

Increase C. Hill and Andrew Burnham, Local Inspectors of steam vessels for the District of Boston and Charlestown, have reported on the causes of the explosion on board the *Empire State*—already noticed in our columns. They exculpate the engineers, Woolson Brockway, and Alfred S. Beebe, in causing the accident. The cause of it they attribute to the steam chimney getting red hot—something which engineers have hitherto held to be impossible—while the engine was working, and for ignorance of which the engineers were not blameable.

The report says: "We believe the smoke pipes were heated to redness by the heat which escaped from the steam chimneys."

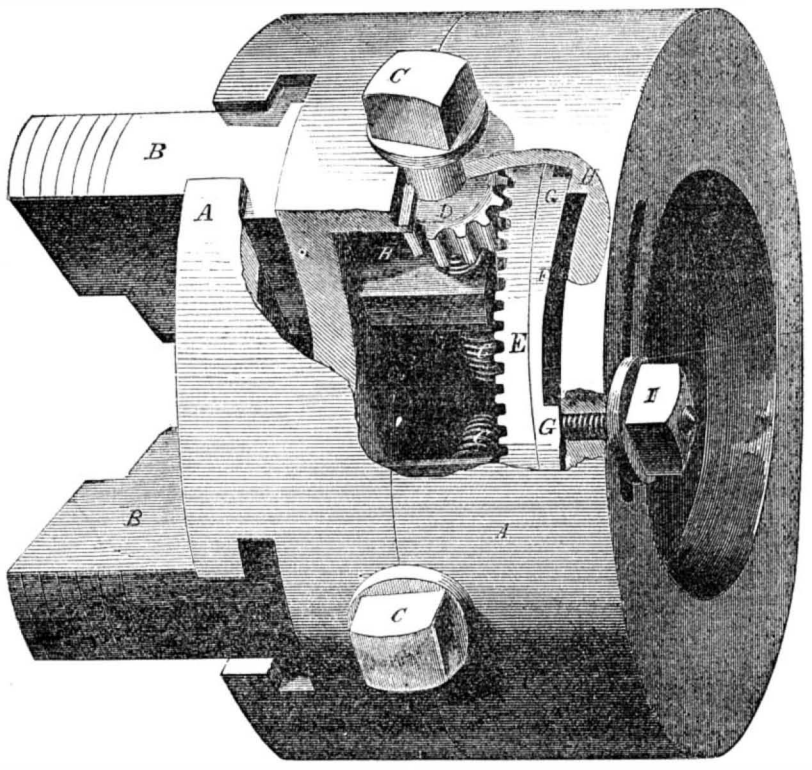
With this opinion of the Inspectors we cannot agree. We do not believe that the explosion was caused in the manner set forth by them. Evidence was furnished that the boiler was not good, and a boiler-maker engaged on board, who was killed, stated to his wife before he started, he was afraid to go on the trip, on account of the dangerous state of the boiler. Such evidence appears to have been ignored by the Inspectors; they have adopted views respecting the cause of the explosion which will not be sustained, we believe, by respectable engineers in general.

Cheap Disinfectants.

For all we have said on this subject, we have frequent inquiries respecting the best and cheapest substances for removing offensive odors in sinks, &c., during hot weather. Half a pound of sulphate of iron (copperas) dissolved in a pailful of hot water and thrown into a sink, will remove the offensive effluvia. Chloride of zinc and chloride of lime are better, but much more expensive. Three cents worth of copperas applied every week in the manner described, will keep down offensive odors in a pretty large sink.

We say it with all seriousness, that there are thousands of persons in our cities who should be hung up by the ears for being ignorant of, or neglectful in not applying this cheap disinfectant.

IMPROVED UNIVERSAL CHUCK.



New Lathe Chuck.

Our engraving illustrates an invention for which letters patent were granted to Michael Neckermann, of Lawrenceville, Alleghany Co., Pa., April 8, 1856.

The jaws of this clutch are so arranged that they may all be moved in and out from the center simultaneously, or singly, as desired; they may also be set at different distances from the center, and then moved simultaneously or separately. There are many chucks capable of being applied in the same manner, but when a change is required, they generally have to be unscrewed and taken apart, thus involving a loss of time and labor. But this is not the case with the present improvement. The arrangement is such that the different applications mentioned only require the movement of a single set screw, upon the outside. Nothing can be more simple and convenient.

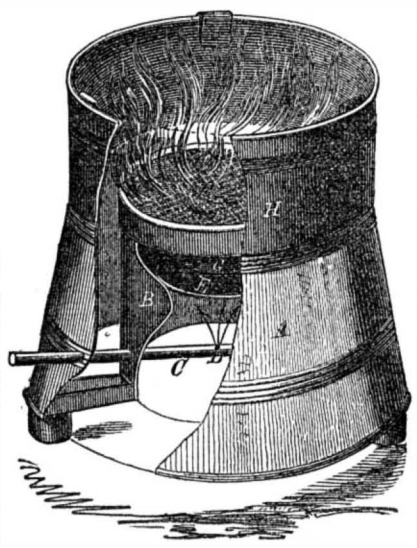
A is the hollow shell which forms a case for the parts. B are the jaws moving in and out from the center of the face of the chuck. C are screws, which give motion to the jaws, B; the screws pass through nuts in the inner ends of the jaws. Upon each of the screws, C, there is a cogged pinion, D, which gears with the cogged ring, E. When the pinions, D, and ring, E, are in gear, all of the screws C, will be turned when one of them is moved, and thus all of the jaws will be simultaneously moved. But when the ring and pinions are thrown out of gear, then each jaw can be separately moved by turning its respective screw, C.

The principal feature of novelty consists in the method of throwing the ring, E, and pinions, D, in and out of gear. It is done as follows:—Behind ring E is a washer, F, which moves independent of E. This washer, F, is furnished with cam or wedge-shaped projections, G. There are similarly shaped projections, H, on the interior of the shell A. When the washer is turned so as to bring the projections, G H, opposite each other, as in the cut, the ring, E, will be pushed forward into gear with pinions, D. But when the washer, F, is moved in a contrary direction, so that its projections, G, come opposite the cavities formed by the space between projections, H, then ring E will fall back, out of gear with the pinions, D. The movement of the washer, F, just described, is effected from the outside of the chuck by means of the screw, I, which passes through a slot in the shell, A, into the washer, F, as seen. Screw I also serves to hold the washer fast, in any given position, thus securing ring E, in gear, or out of gear, as desired.

This is a very simple and practically effective chuck. It enables the machinist to center any piece of work, whether it is round or not, with rapidity and convenience. It prevents the employment of all or only a portion of the jaws, as desired. If necessary, jaws of different form, externally, to suit special cases, may be used without interfering with the inside parts. The jaws may be taken out for repair with ease. Chucks of this kind cost no more in their manufacture than the universal chucks commonly employed. For further information address the inventor as above.

Improved Gas Stove.

By Starrett & Weir, Lowell, Mass.—This is a small portable apparatus, for family use, in which gas is economically and conveniently employed for fuel. In our engraving, a portion of the sides are taken away, in order to exhibit the construction.



The stove consists of two round bands of sheet metal, A and B, placed one within the other. C is a small pipe, receiving gas from any burner in the apartment by means of an elastic tube. The gas rises from the aperture at D, which is in the center of band B, and strikes against the deflecting disk, E, which spreads it, and causes it to escape up between the edges of the disk, E, and the sides of B to the gauze, F, where combustion ensues. Disk E is perforated in its center, said perforation being partly covered by another disk, G. A portion of the gas rises between disks E and G.

Bands B and C are both open at the bottom. When the gas escapes at D it mixes with the air. The object of the disks is to spread out the gas evenly, so that when it reaches the gauze an even and steady combustion will take place. We have tried this stove, and found it to operate well. When lighted, the surface of gauze, F, is covered by an even mass of blue flame, and a most intense heat is generated. H is a temporary rim resting on A, for supporting a tea-kettle. This stove is useful for a variety of purposes. When desirable, a baker may be placed upon it, and bread cooked in the most approved manner. Roasting, broiling, heating flat irons, &c., may be done with the utmost facility. Address the patentees for further information. Patented May 13th, 1856.

Highly Important.

Take notice, subscribers, that the present is No. 51 of the Scientific American, and that *the next issue completes the volume.* Please remit at once if you desire the paper to be continued, otherwise your names will be crossed from our books. This rule is invariable, and has received the approbation of our subscribers for the past eleven years.

The Charter Oak Down.

The famous old Charter Oak of Hartford, Conn., which has been such an object of veneration with the people of Connecticut, was blown down during a storm on the 21st inst.

In 1686, it concealed the Charter of Connecticut, granted by Charles II, when it was demanded by the minions of James II, in order to annex that Colony to Massachusetts From this it received its name. It was 33 feet in circumference and hollow inside.—When the white men came to the valley the Indians said it had been venerated by their fathers as the monarch of the forest, for centuries. This brave old oak will wave in the gale no more.

Blister Flies in Texas.

Messrs Editors—In a recent number of the Scientific American there is an account respecting the damages committed by insects on the potato crop of Wilson Co., Tenn. The same insects have been observed in our country for several years; it is a kind of *Lytta*, and results from experiments made by druggists here prove it can as well be used for blisters as *Lytta Vesicatoria;* it is of a light brown color, with two yellow stripes on each wing-shell; the head, which is very small, is of a red color, with two black points. It comes regularly early in July or end of June, and lasts till August—sometimes only two or three weeks. The only remedy I can counsel, against this depredatory insect, is to catch them, where they come in large troops, and sell them to the druggists, who will soon find it to their advantage to use an article produced in the country, which is much cheaper and will do the same service as the *Cantharides* imported from foreign countries.

A. D. P. Bandelier.

Highland, Madison Co., Tenn., 1856.

Photograph of the Moon.

According to a Milan newspaper, Rev. Father Secchi, Director of the Observatory at Rome, has succeeded in taking photographs of the moon, and among them one in which the mouth of a volcano of Copernicus is distinctly represented.—[Exchange.

[Photographs of the moon, showing the same volcano, were taken by Mr. Whipple, of Boston, four years ago, and sent to this office.

Saving Fuel.

The Amsterdam (N. Y.) *Recorder* states that John Case and Isaac Soule, of that place have invented a furnace which consumes all the smoke and sparks of wood fuel, and that saves a vast amount of the heat which is, in general, allowed to escape.

A Tall Chimney.

The chimney of a vitriol factory, in Providence, R. I., now building, is to be 214 feet high, 20 feet in diameter at the base, and 10 at the top, with the expectation of carrying off all poisonous fumes.

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Scientific American.

NEW-YORK, AUGUST 30, 1856.

Errors in Engineering.

The great and potent physical agent of modern civilization is the Steam Engine. Before its advent the means of ocean and land communication; of manufacturing and producing the useful and ornamental, were sluggish and rude. Were this mighty and docile agent of man annihilated, without a substitute to fill its place, the civilized world would recede into a state of comparative barbarism, so far as it relates to the useful arts. Every improvement, therefore, to increase its power and economise its working must be of great importance. The attempts to improve it may be counted by the thousands, but except in some different arrangements of its parts—the most original of which, perhaps, are to be found in the locomotive—it is the same now as it was when it came from the hands of Watt.

All men are liable to make mistakes—the ingenious, the learned, and the unlearned—but we are of opinion that a more extensive knowledge of the philosophy of the steam engine would have saved hundreds from having committed many grave and expensive errors in steam engineering.

We regret to state that such errors do not cease to be repeated. It is but a short time since a locomotive called the *Vampire* was built in this city, at an enormous expense, to be driven principally with hot gases of the furnace, and it suddenly roasted itself up, as we anticipated and stated; and yet the same principle is now being attempted to be carried out in this city, on a small steamboat called the *John Farron*. Surely, nothing but failure can result from this engineering error.

A lofty announcement of a new discovery in the science of steam and its application to the steam engine has recently been made in England by C. L. Siemens, Civil and Locomotive Engineer, the author of some works on the steam engine. His invention is called the "Regenerative Steam Engine." He read a paper on the subject before the *savans* of the Royal Institution, which has been published in the London *Engineer*.

The object of his invention is to use a wire gauze regenerator, like those of Stirling and Ericsson in their air engines, only he applies it to the steam engine. He pays a backhanded compliment to air engine inventors, by stating that they were correct in their views in saving heat, only they stupidly employed an inferior element to steam, its coefficient exceeding air in the ration of 3 to 2. He employs a steam boiler to raise steam, which then enters the respirator at 250° Fah., at the back end of which is a heater to raise its temperature to 700° Fah.; it then enters the working cylinder, is expanded, and exhausts through the respirator, giving out its heat to the wire gauze in the same manner as the Ericsson Hot Air Engine. This Steam Regenerator Engine has the advantage over hot air, inasmuch as it has a more compact agent, (water,) as 1 is to 815, to operate with to generate the expansive working medium—steam.

Yet it appears to us that C. L. Siemens labors under a delusive idea respecting his Regenerator. He may obtain economic results from superheating his steam, but not by throttling his exhaust, causing great back pressure, to save his heat, excepting so much as will heat his feed water, and this advantage is obtained in the heaters of common high pressure engines. He lays down the theory and calls it *new*, namely, that heat is *dynamic*; that it consists of motion in the particles of matter, and that it may all be saved in a steam engine. Those parts of his engine exposed to a temperature so high as 600° Fah. will soon be destroyed, make them as thick and as strong as he can; and were he to work his superheated steam more expansively—discarding the Regenerator—it is our opinion he would obtain more economic results than by its use. He represents the old steam engineers as believing that steam was a kind of chemical compound of heat and water, and that this idea retarded improvements in the steam engine. He insists that the new dynamic theory of heat will pave the way for reducing the cost of working the steam engine to one-fourth of what it is at present. We really wish him success; but the new dynamic theory of heat is nothing but a mere *term* out of which to raise a dust. The old engineers never considered steam, as applied to the engine, a chemical compound—they understood and still understand it to be a dynamic agent.

Engineers ever have believed that heat combined with water (no matter how) produced steam, and steam produced mechanical or dynamic effects, and the pretended new theory presents nothing more. It has become a common practice of late for persons to give old things new names, and forthwith claim them as new discoveries. The engineering error put forth in the new views of Siemens consists in considering that the heat in a volume of steam after *it* has produced its mechanical effect, is lost in the common steam engine, and that it can be saved to produce like effects over again, which is opposed to science and philosophy.

It is indeed a self-evident principle in mechanical philosophy, that the surplus heat in steam *not expended* in moving the piston in a cylinder may be made to give it out to steam of a lower temperature by conduction in a regenerator; but the heat (considering it the moving force) *expended* in moving the piston, cannot be made to produce a like effect over again in any apparatus. Were it otherwise, the regenerator would be a perpetual motion—a source of infinite dynamic power. This being the case, the most simple and the best way of economising the heat of steam is to allow it to exercise the fullest dynamic effect possible in the cylinder before exhausting, as is now done in some expansive engines.

The Awzune.—Explanation of Steam Boiler Explosions.

The New York *Tribune* of the 16th inst. contains a very long article by a correspondent signing himself "Piston Rod," explaining the cause of steam boiler explosions. With some of his opinions relating to bad boilers, and their management, we cordially agree, but with an attempt to appear very learned, he presumes upon the ignorance of the public He says:—

"When the water falls below the fire surface, the part exposed becomes red hot; the steam, *not the water*, is now decomposed—that is, the hot iron absorbs the oxygen of the steam. As the steam loses its oxygen, hydrogen, the other constituents of steam, accumulates until there is formed within the boiler a "combination gas," which we will term *awzune*, composed of about 60 parts hydrogen and 40 parts oxygen. Awzune being exposed to contact with the hot iron, instantly explodes. It inflames spontaneously at 300°, and therefore contact with hot iron is not essential to an explosion. It is the most powerful and irresistible agent now known. It is the 'inflammable air' of Cavendish, and the 'red-hot' steam of Perkins. It can, at 300°, be confined in no conceivable metallic structure. This then is the agent in boiler explosions, and the only safety from this terrific power is to keep a sufficiency of water in the boiler. It cannot be produced in a boiler unless a part of the boiler is red hot; and its formation can in no way be prevented when a part of the boiler is red hot; and when produced, no possible strength of boiler can resist an explosion."

"Piston Rod" coins the word *awzune* to astonish the groundlings. There is no such gas—single or compound—in existence. There is a condition of air called *ozone*, effected by passing electric sparks through it, but while it possesses great bleaching properties, it is not explosive, and it derives its name from its odor.

It is stated in the extract above, that "the hot iron absorbs the oxygen of the steam, and as the steam *loses* its oxygen, hydrogen, the other constituent of water, accumulates until there is formed within the boiler a combination gas, which we term *awzune*, composed of 60 parts hydrogen and 40 parts oxygen."

Now, if the iron absorbs the oxygen of the steam, how could a combination gas be formed? It is first stated that the oxygen was taken up by the hot iron; then lo! in the next sentence, 40 parts of oxygen appear combined with the hydrogen in the form of *awzune*. What a ridiculous contradiction. Water and steam are composed of two volumes of hydrogen and one of oxygen, or 1 part by weight of the latter and 8 of the former. Where did the 40 parts of the oxygen in this wonderful *awzune* come from, if the iron absorbed the oxygen of the steam?

The inflammable air of Cavendish was hydrogen, not *awzune*—this every chemist knows; he was the discoverer of this gas. Jacob Perkins was a very ingenious man, and tried many experiments with high pressure steam, but although much is said of his making steam red hot, there is no positive evidence that he ever did so.

When water is decomposed into its elementary gases, and an electric spark passed through them, they explode with violence and return to their former state, but water never has been resolve d into its elementary gases (both set free) in a red-hot iron vessel. About one thousandth part of a volume of steam has been decomposed, and the oxygen and hydrogen set free, by platina elevated to a white heat, but never with red-hot iron. Oxygen may be absorbed from steam by a red-hot boiler and the hydrogen set free; but it is not an explosive gas. And when an engine is working, even if hydrogen were set free—according to the above extract—it could not accumulate in the boiler; it would pass off to the cylinders with greater velocity than the steam. We have known several cases of boilers being red hot without explosions taking place.

Almost all explosions are caused by overpressure of steam, in defective and ill-managed boilers, not by the generation of an explosive gas, which is an old theory.

The theories put forth to explain steam boiler explosions, are as numerous as the locusts of Utah. The awzune theory, we presume, will not immortalize its author, excepting it may be the appropriating to himself the discovery of a new (old) theory by giving it a name.

Recent American Patents.

Improved Door Spring.—By John Broughton, Chicago, Ill.—Consists of a novel arrangement of parts, whereby a cheap, effective and durable spring is applied to the door, but entirely concealed from view.

Machine for Separating Bristles.—By A. Randel, of New York City.—The bristles of which paint and other brushes are made require to be separated, so that their heads, which are larger than their points, will all be laid together. This work is generally done by hand, and is a very slow operation.

This improvement consists of a flat board or bed plate on which the bristles are placed. They are then rubbed back and forth by a vibrating rubber, which causes the pile to separate into two portions, one of which passes off at one end of the board with its heads all laid in the same direction, the other portion passing off at the opposite end, its heads laid in a contrary direction. Feed rollers convey the bristles from each end of the machine to a suitable receptacle.

Concentrating Sweet Milk. — A patent granted to Gail Borden, Jr., of Brooklyn, N. Y., for concentrating sweet milk in vacuo, embraces the discovery made by him, that to render concentrated sweet milk capable of long keeping and solution in water, it must be kept out of contact with the atmosphere during concentration, to prevent incipient decomposition. Milk concentrated by his process requires no antiseptic, like other concentrated milks; it is perfectly soluble in water, and it has been tested with great satisfaction in voyages across the Atlantic. Pure sweet milk can be concentrated in the rural districts, and sent to cities in tin canisters for sale and use. It is certainly a useful and valuable invention, enabling masters of vessels to use sweet milk on the longest voyages, and furnishing the dwellers in cities with pure sweet milk, not liable to become sour—as is the case with city milk. Numerous experiments during the past three years were made by Mr. B. before his process was perfected; in these he was eminently assisted by advice and the use of apparatus by Mr. John H. Currie, Pharmaceutest and Chemist, at his laboratory in this city.

Improved Surgical Instrument.—By S. McLean, M.D., Reynale's Basin, Niagara Co. N Y.—This invention relates to that class of cupping instruments employed to force the blood and other secretions of diseased parts to the external surface of the body, by atmospheric pressure. The common cupping instruments consist of a single concave disk, the edges of which are liable to be forced into the flesh by the pressure of the atmosphere, to the injury of the patient. The present improvement consists in the addition of two or more disks, placed one within the other, so that the bearing surface of the instrument will be greatly increased, and the objections just named totally avoided.

Ivory Bleaching Apparatus.—By A. C. Breckenridge, (assigned to Julius Pratt & Co.) of Meriden, Conn.—The ivory with which pianoforte keys and other articles are covered is, naturally, of a yellow, disagreeable color. After being sawed up into thin pieces for use, it requires to be bleached, and this is done by exposing the pieces to the atmosphere and sunlight for a period of about six months, the pieces being turned over every day or two. It is usual to place the slips of ivory on an angle, and to support them at their ends upon wooden pins. But however small the bearing surfaces are on which they rest, the pieces are apt to present discolorations at those points.

The present invention consists in providing the bleaching frame with grooved strips of *glass*, arranged to receive the ends or sides of the pieces of ivory to be bleached, in such a manner as to admit of the frame being turned completely over with the pieces in it, thus obviating the necessity of turning the pieces one by one, and having every part of the ivory exposed to the light, whichever side of the frame is upwards.

The frame containing the ivory is intended to be arranged under a skylight, in substantially the same manner as other ivory bleaching frames. No other material besides glass would admit of the ivory being received in grooves. The parts which are exposed within the grooves of the glass are as much exposed to the light as any other portions. There is another advantage in glass, viz., that if any water condensed from the atmosphere upon the skylight drops upon the frame, no stain is produced upon the ivory.

Improved Vise.—By R. W. Thickens, of Bras her Iron Works, St. Lawrence Co., N. Y.—Consists, first, in a peculiar means of sustaining the movable jaw in a vertical position, so that it may be moved back and forth, parallel with the stationary jaw. Second, in the employment of a nut composed of two parts, so arranged and operated that the nut may be connected and disconnected from the screw of the vise at will. This enables the operator to push the jaws together against any article, and then secure it with the screw in much less time than can be done by the common vise.

Improved Harvester.—By W. Tinker, of Kelloggsville, Ohio.—Consists in a means of driving the sickle by cam surfaces, and also in a peculiar construction of the sickle, which prevents it from clogging up by the falling grass.

Knife Cleaner.—By W. W. Hopkins, of Chesterfield Factory, N. H.—Consists in the employment of a reciprocating elastic rubber and an elastic bolster, so arranged that when the knife is placed between the bolster and rubbers, and the latter moved, every portion of the knife blade will be thoroughly scoured.

Improved Paddle Wheel.—By Abraham Houseworth, of New York City.—Consists in having the floats or buckets pivoted to the arms of the wheel in pairs, so that they may open and close, similar to a fan. The floats are made to spread as they enter the water, and close as they pass out. All lifting of the water is thus avoided, and an important saving of power alleged to be effected.

Improved Mold for Glass Fountain Lamps.—By H. W. Adams, of New York City.—The lamp for which this mold is intended has an upright circular reservoir, or, as it is termed, "fountain," and an upright circular cup on one side to receive the burners. The reservoir and cup are connected by a horizontal passage. The casting of such a lamp in glass has been considered by glass manufacturers to be

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an operation of very great difficulty, if not of impossibility. The present improved mold renders the operation of making such lamps perfectly simple and easy. Drawings would be required to explain the parts.

Improved Saw Mill.—By R. Eickmeyer, of Yonkers, N. Y.—Consists in the employment of an expanding pulley constructed and arranged so that the speed of the carriage may be regulated as desired. Also in connecting the crank shaft which drives the saw with the shaft which drives the carriage, in such a manner that a variable speed is given the carriage to suit a variable speed in the saw. The saw moves quicker in its ascent than in its descent. The improvement is applicable either to vertical or inclined saws.

Improved Primer for Fire Arms—By Lieut. J. N. Ward, U.S.A.—In this invention the percussion hammer is made hollow, and the priming paper rolled up and placed within. Whenever the hammer is cocked the paper is fed out for a little distance and then cut off and exploded on the nipple by the descent of the hammer. We have carefully examined the improvement as applied to a U S. musket and regard it as one of a very practical character. It is certain in its operation, and the mechanism is simple. The improvement can be applied to all guns in use at a very small cost, without any alteration in the lock part, the only change being in the form of the hammer.

Improved Music Rack.—By Thomas Ward, of Birmingham, Huntington Co., Pa.—See engraving of this improvement on page 344 of our present volume, July 5, 1856. The inventor desires us to say that the tongues, G, should be quite short; not more than one-third as high as shown. F, instead of being a lamp support, is used to prevent sheet music from being thrown from the rack in turning the leaf, the end wire being passed down from the top along the middle of the sheet.

Notes on Patented Inventions.—No. 19.

[Concluded.]

Coloring Wood.—In June, 1844, a patent was granted to Charles F. Spicker, of New York City, for a method of coloring and hardening wood "by diffusing tannin and tannic acid, together with vegetable colors, throughout the whole structure of the wood, and incorporating the same therewith, by the aid of caustic potassa, or soda, and in varying the color afterwards by the use of metallic salts, whose base has an affinity for tannin." The application of this method to coloring manilla grass and other articles for cordage was also claimed.

A knowledge of coloring wood will, no doubt, be very useful to many persons. In the above described process there is nothing new to those acquainted with the art, excepting the use of caustic potassa, and this is not necessary.

Wood steeped for some days, or boiled for a few hours in a strong solution of logwood, then steeped for an hour in a weak warm solution of the sulphate of iron, will be colored black. By adding some sumac or oak bark to the logwood liquor, the color is slightly improved, and this is the practice with many persons who color wood. By using some chloride of tin, or alum, instead of the sulphate of iron, a purple color will be produced.

If wood is boiled in a strong solution of sumac and alum for two hours, then in a strong liquor of hypernic (or other common red wood for coloring fugitive red on cotton) for one hour, it will be colored a deep red.—A little metallic salts added, such as salts of tin, for about five minutes, after boiling in the hypernic, will highten the color; a small quantity of sulphate of iron will make it a deep crimson.

If wood is boiled for about an hour in a strong liquor of quercition bark containing a little alum or chloride of tin, it will be colored yellow.

A common method of coloring white wood an amber color is to rub over its surface with a sponge dipped in diluted nitric acid, then hold the wood over a clear fire for about two minutes. Beer made slightly sour with sulphuric acid will also color white wood yellow, if applied in the same manner as the dilute nitric acid.

Resinious pine wood cannot be colored by any of the processes described, it must be deprived of its resin before it will imbibe the coloring matter. Oak and hickory, and other woods, cannot be dyed bright colors; but, owing to the tannin they contain, are capable of being colored black with facility. Unresinous woods are the most favorable for receiving artificial colors.

Fire Bricks.—C. W. Fenton, of Vermont, was granted a patent for making fire brick in September, 1837. They were composed of kaolin clay and fine white sand, in equal parts, kneaded with water, molded, dried like common brick, and then fired at a high heat in the same manner. Bricks made of these materials were tested in furnaces, and stood the heat remarkably well. In many parts of our country such bricks may be manufactured with profit.

Not many years ago all our fire bricks were imported from abroad, but now excellent fire bricks are made at Perth Amboy, N. J.; they are made from fire-clay, which is found in the neighborhood. There is, no doubt, plenty of such clay in many parts of our country; it only requires to be mixed with about one half its bulk of sand, molded, dried, and burned at a high heat.

Floor-Scrubbing Machine.—Among the numerous machines patented to abridge domestic labor, such as washing machines, self-rocking cradles, knife scourers, apple parers, &c., some of which are excellent, and are in use, no machine for scrubbing floors has come into use, although several have been patented. One reason for this is, no doubt, owing to the complex motions required for the operation, thereby involving intricate machinery.

Washing Machines.—No less than 270 patents have been issued for such machines, thus showing that great attention has been devoted to their improvement, and yet how limited in practice. It shows one of two things, that improvements in such useful labor-saving machines have not been of the *right sort*, or that the ladies do not appreciate them—that they are not reformers in useful improvements.

With this article these "Notes on Patented Inventions" are concluded. With much that is curious a great deal of the useful has been presented. Of patented machines not a great deal could have been said intelligently without engravings, therefore the subjects chosen were mostly chemical in their nature, and were treated in a discursive and suggestive manner, to throw as much light on them as possible. We infer, from letters received by us, that they have attracted considerable attention, and have been read by many with interest.

American Association for the Advancement of Science.—No. 1.

This Association is now holding its tenth Annual Meeting, in Albany, N. Y.; it commenced on Wednesday the 20th inst. The President, James Hall, of Albany, who was elected at the meeting held in Providence, R. I., last year, called the Association to order at 10 1-2 o'clock, A. M., and Dr. Sprague opened the proceedings with prayers. Judge Parker, of Albany, in behalf of the local committee, then delivered a short address, welcoming the Association, for the second time in five years, to that city.

None of the eminent men of science from Europe, as was once expected, have been able to attend. Thirty-five passages, both ways, were secured for them across the Atlantic, but the committee, it seems, were unable to complete the arrangements before the month of June last, and the European *savans* could not make arrangements to be present on such a short notice,—all of them, however, gratefully responded to the invitations. The American Dons of Science, however, are present in strong array. Agassiz, Henry, Pierce, Horsford, Hare, Leidy, Rogers, Mitchell, Hitchcock, Wells, &c. &c., and a delegation from Canada, consisting of Prof. Smallwood, Sir Wm. Logan, and others. We shall give condensed reports of the most useful and interesting papers read without reference to their order, as that is of no importance.

Mind, Numbers and Form.—The first paper read was by Prof. Pierce, of Cambridge, Mass., the above subject, which he terms "Potential Arithmetic."

He had hesitated whether to introduce such a subject before the Association, not knowing whether it legitimately belonged to the advancement of science, but had finally decided that it was best to direct the attention of members to the subject. It was a part of a great field which he called Potential Physics—namely, the examination of power from an *a priori* point of view. The investigation of this question leads us to see that the world was framed by intellect, according to fundamental ideas which are the same as those of our own minds. Now this is the proper, legitimate work of science. Since the world was made by a Mind, according to the laws of mind, the pursuit of the knowledge of the mind will lead to a knowledge of the world. The law of numbers was first perceived to be one of the fundamental ideas of creation by Pythagoras. As Hay has shown, it was by a numerical combination of circles that Pythagoras made a human figure that no artist has equalled. And the same arrangement, by altering the numerical proportion, will change from an Apollo to a Venus, or to lower types of men, and even of animals. These investigations of Pythagoras will be revived. In like manner Greek architecture, vastly more beautiful than its imitations, was founded purely on numerical proportions. Pythagoras was mistaken only in supposing that number is the sole foundation of the universe. There are other prime ideas, such as those of Space and Time, also to be considered. He believed that by the combinations of the simple primary ideas of number, and of the consciousness of power, we should be led to laws similar to or identical with the laws of both organic and inorganic chemistry, and also to those of alternate generation in zoology.

Metereology.—Prof. Smallwood, of Canada, read a paper, upon the peculiar appearance of the atmosphere at Montreal, on the 23d day of May, 1856. An immense fire in the woods, about 250 miles from Montreal, at Pembroke, had sent up a cloud of ashes and burned leaves, which passed over Bytown, and afterward hung over Montreal, covering the entire sky with the exception of a strip in the horizon, cutting off the yellow rays of light, but not diminishing either the heat or actinism.

He added an account of a thunderstorm which followed this appearance of the cloud of ashes at an interval of about twelve hours; and also said he had discovered an invariable connection between the electric state of the air and the form of snow crystals, the crystals being more elaborate when the air was negative. This fact might possibly lead to something useful in electro-metallurgy.

He then passed to a description of a new anemometer, a modification of previous existing instruments, which records by a steel point on paper the velocity of wind in miles per hour, and the times at which the velocity changes, also the direction. It registers storms of 70 or 80 miles an hour, and gentle breezes of half a mile, and has been in use for twelve years without the need of repair.

Prof. Henry, paying a warm tribute to Prof. Smallwood's industry, accuracy and zeal, added that he had known an instance last winter of ashes and leaves being carried a thousand miles in the Mississippi Valley before falling to the earth.

Dr. Hare made some remarks on electric forces and the importance of paying more attention to the meteorological effects of electricity, and wished that some experiments might be made to determine the agency of conductive electricity in producing rain from fog.

Ammonia in the Atmosphere.—By Prof. Horsford, of Cambridge, Mass.—He stated that he had read a paper upon the subject before the New Haven meeting, and was now about to confess the errors of that paper, and to show how he had been led into them, namely, by using asbestos as an absorbent, which had not previously been freed from ammonia. On a re examination of the problem and repetition of the experiments, it was found that many new precautions and modifications were necessary in order to secure a more perfect accuracy; the exceeding delicacy of the measurements requiring more care than is usual in quantitative analysis. Eight determinations with this renewed care showed that a cubic meter contains from four to eleven-tenths of a millegramme of ammonia.

[A meter is 39·37023 English inches in length. A millegramme is only ·0154 of a grain. French measures are now employed by men of science.]

Dr. Hare then remarked upon the value of ammonia, and said that he who could devise a means of converting the nitrogen of the air into ammonia would do more than he who should discover the philosopher's stone. He expressed the hope that the new process of producing aluminum and sodium would lead to a mode of making cyanide of sodium which would readily yield ammonia for the use of farmers. He gave an account of his attempt to induce the Corporation of New York to use his processes for converting the night soil of the city in to manure.

Prof. Horsford, in reply to inquiries, said that he no longer thought there was any connection between the direction of the wind and the amount of ammonia in the air.

Pavements and Health.

Every city should endeavor to have its streets well paved, because health and pavements have an intimate relationship. In the city of Rome the utmost watchfulness is exercised respecting the pavement of the streets, because it has been found that maliarian fever is sure to visit every unpaved locality in it. In the city of Liverpool, England, narrow and unpaved streets in which the typhus fever used to rage the year round, were rendered healthy by paving—the fever disappearing with the entrance of the paving stones.

We are confident that any city having clean, well-paved streets and a plentiful supply of good water, is just as healthy, if not more so, than the majority of rural villages. Stagnant pools of water are the well known sources of miasma; paved streets carry off the surface water that would otherwise become stagnant in numerous nooks and hollows.

Many villages once afflicted with fever and ague have become free from it after their streets were graded and paved. We recommend this subject to the attention of all cities and villages troubled with malarian fevers; they will find it to be of vast importance to look well to the condition of their streets.

Trial of Reaping Machines in France.

At the recent Agricultural Congress held in Paris, it was announced that several prizes would be awarded to exhibitors of superior Reaping Machines. The trials for these prizes took place on the 2d inst. at Courcelles, in a large field of oats, divided into lots of twenty acres to each machine.

Seven machines were put upon trial, viz., two of McCormick's (one by M. Bella, of Grignon, and one by M. Laurent, of Paris); Hussey's, by M. W. Dray; Manny's, by M. Roberts; two of M. Mazier, (Orne); and a single-horse machine, by M. Simon, of Paris.

Of all these, three only accomplished their tasks—those of M. Dray, and M.M. Bella and Laurent. The others either stopped of themselves or were stopped in consequence of their defects.

The chief interest of the trial became concentrated upon McCormick's machines by the French makers, and Hussey's, by M. Dray; and it was to these that the prizes were awarded The first prize was not adjudged to any one, none of the machines exemplifying that degree of excellence for which alone, if attained, it was designed. Two second prizes, of 400 francs and a silver medal each, were awarded to M. Bella and Laurent, and a third, of 300 francs and a bronze medal, to M. Dray. The reason that the fourth prize, and not the third or second, was given to M. Dray was, that a greater number of laborers were employed in connection with his machine than with either of the others.

Bronze Powde

This is made of brass composed of 60 parts copper and 40 of zinc. It is reduced into powder and tinged various shades, by exposing it to different degrees of heat in an open pan over a fire.

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TO CORRESPONDENTS.

W. D., of Md.—It is our opinion that a patent cannot be obtained for your process of silverizing glass. The method of applying silver leaf to glass through the agency of gum, size, and a varnish, is well known. Silver leaf is oftentimes applied to glass by sizing, and a backing of varnish put on to prevent moisture acting on it, also to prevent it from being easily rubbed off. The samples which you have sent are very good. The common way of silvering glass reflectors—concave and convex—is by the agency of mercury, on which it is made to adhere to the glass by excluding all the air. This process is unhealthy, but it is very perfect for the purpose. The coating on the back of the silver leaf with paint instead of varnish would not be considered a patentable feature.

J. W. H., of Barkersville.—It appears to us that your mandrel for turning out tapering pieces, contains some novelty, although you cannot expect to cover broad ground in the claim. We do not know of any one who would be likely to become interested in it. Cannot you find some one in your own neighborhood who would lend you some assistance in bringing it out. This we suggest as the best course for you to pursue.

N. P., of Argusville.—Saladee's Coachmakers Maga zine is published at Columbus, Ohio.

S. W., of N. Y.—We cannot inform you as to the frog market. You can find out when you come to the city.

P. S., of Va.—Placing a grinding stone on a horizontal axis, and combining it with a concave stone below, so as to grind the grain when introduced between the two stones, is not new or patentable.

C. A., of Me.—Your title of Professor of Perpetual Motions will be truly earned whenever you get one of your self-motors in operation. The correspondent you name had a contrivance for making water lift itself. He said it was sure to work, and wouldn't take "no" from anybody; so we told him to proceed. We say the same to you. Within the last few months we have illustrated one or two perpetual motions by engraving. What a glorious time it will be when perpetual motions come into general use. Steamboats will run without smoke or fuel. The power of the wind, which now drives our ships, will be all wasted. Locomotives will disappear, for the cars will go of themselves. Horses will change from useful to worthless beasts. The lock-makers will do a thriving business, for since all cars and wagons will have power to draw themselves, it will be necessary to lock them up securely when not in use, both day and night, else they might trot off to parts unknown. Our accounts are square.

C. C., of Pa.—We cannot continue your name as a subscriber on the new volume unless you remit the amount of subscription. This is our *invariable* custom, and we cannot deviate from it in any case. If you wish to make sure of getting a complete volume you should remit the subscription without delay. Many subscribers on the last volume delayed renewing their subscriptions for a few weeks, and were unable, in consequence, to get all the back numbers.

E. F. L., of Va,—Your device for a railroad brake is not new or patentable. Brakes on substantially the same plan have long been known. The brakes now in common use are sufficiently powerful to arrest the wheels and cause them to slide upon the track. There is no trouble in putting power enough on the wheels. What is wanted is some device under the control of the engineer, that shall stop any train moving at the rate of 30 miles an hour, within a space of 75 or 100 feet. Blocking the wheels of the cars will not do this. Your previous letter has been destroyed.

T. F. W., of Leeds, Eng.—Mr. Avery has ordered a renewal of your subscription to the Sci. Am., and the paper will be regularly mailed to your address. We do not know what H. & Co. propose to do in reference to their English patent. It is quite certain, however, that your proposed improvement is not new. The same device is well known here, and a valid patent could not be procured for it.

J. S., of Ill.—The railroad which you propose to build on an elevated track with a central rail, and having the cars suspended on each side, to run trains at the rate of 150 miles per hour is the same as that of Robert Mills, illustrated on page 368, Vol. 8, Sci. Am.

F. C. N., of N. Y.—You cannot make glass without a very high degree of heat in the furnace.

C. W. C., of Phila.—Hog's bristles are composed mostly of gelatine, combined with a little iron, sulphate of of lime, some common salt, silica, and manganese. We have no recent analysis of bristles or hair. Most chemists are of the opinion that a correct analysis has not yet been made.

R. S., of C. W.—We are unable to give the information you require in regard to sawing machinery without subjecting ourselves to a considerable outlay of time. You had better write to H. Wells & Co., Florence, Mass.

C. T. Savage of Albany, N. Y., manufactures a very convenient apparatus for heating water for baths. Some of our correspondents have enquired for such an article.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Aug. 23, 1856 :—

. O., of N. Y., $55; W. F. F., of Ill., $30; R. B., of N Y., $25; S. S. H., of O., $40; S. B. P., of N. Y., $25; G. K., of N. H., $25; C. O. & Co., of M. T., $25; D. L. of Mass., $25 S. T., of O., $30; J. P., of N. Y., $30; L. A. O., of Pa., $30; W. W. L., of Miss., $50; E. B. McC., of Iowa, $25; J M R., of N. Y., $90; H. R. R., of N. Y., $25; P. T., of N. Y., $25: A. E. & W. H. C., of N. Y., $10; H. R. H., of N. Y., $20; N. & B., of N. Y., $30; L. B. F., of N. Y., $10; A. B., of N. Y., $30; G. & H., of N. Y., $25; W. D. M., of La., $25; W. N. M., of R. I., $30; W. B. & D. S. B., of Conn., $80; D. D. of N. Y., $250; J. M., of Pa., $25; W S., of R. I., $25; W. B., of Md., $12; E. G., of Ind., $25; A. R., of Ill., $25; S. I., of L. I., $30; J. A. R., of Mass., $25; J. V. J., of Mich., $10; B W., of Mich., $25; J. P., of N. Y., $5; W. G. R., of Mass. $12; D. G., of Ill., $25; W. G. B., of Ala., $23; A. O., of N. Y., $30; G. D., of N. Y., $30; W. S., of Iowa, $30; S. W. R., of Mass., $30; B. B., of N. Y., $250; J. S., of O., $30; R. W., of Conn., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, August 23:—

G. K., of N. H.; R. B., of N. Y.; C. O. & Co., of M. T.; S. B. P., of N. Y.; D. L., of Mass.; W. D. M., of La.; H. R. R., of N. Y; I. F. B., of Ga.; P. T., of N. Y.; A. B., of N. Y.; H. & G., of N. Y.; E. G., of Ind.; A. R., of Ill.; J. M., of Pa.; W. B., of Ind.; B. W., of Mich.; W. G. R., of Mass.; W. S., of R. I.; J. P., of N. Y.; R. W., of Conn.

Important Items.

New Edition of the Patent Laws.—We have delayed for some months the issue of another edition of the present Patent Laws in the expectation that Congress would most certainly at this Session, make some simple amendments to them—such as are earnestly sought for by inventors and patentees. As there is now little hope that any such changes will be made during the session, we have issued a complete edition of the laws, including the regulations of the Patent Office—copies of which can be had for 12 1-2 cents each. If any of our readers, who have ordered the laws and regulations, and have not received them, they will be promptly supplied upon renewing their requests by letter.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Terms of Advertising.

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IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

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POLYTECHNIC COLLEGE of the State of Pennsylvania, West Penn Square, Philadelphia.—Organized on the plan of the Industrial Colleges of Continental Europe, and the only College in the Union in which gentlemen graduate in the industrial professions. Fourth year, commencing Monday, Sept. 15th, 1856.—Faculty: Mathematics and Engineering, Prof. S. H. Peabody; General and Applied Chemistry, Prof. A. L. Kennedy; Mechanics and Machinery, Prof. H. H. Boucher; Geology, Mineralogy, and Mining, Prof. A. W. King; Architectural and Topographical Drawing, Prof. J. Kennedy; Modern Languages, Profs. B. Steinthal and V. De Amarelli. For catalogues and further information Apply to A. L. KENNEDY,
51 2 Prest. of the Faculty.

1000 YOUNG MEN can make 500 per cent. or over at home or abroad. But small means required. Business new, easy, neat, respectable. For full particulars address (enclosing a stamp) WILLIAM HART,
51 3* Mayville, Dodge Co., Wis.

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SWISS DRAWING INSTRUMENTS—A full stock of these celebrated instruments always on hand. Catalogues gratis. AMSLER & WIRZ,
51 4* 211 Chestnut st., Philadelphia.

SCHOOL APPARATUS—Globes, Orreries, Tellurians, Geometrical Models, Dissected Cones, Magnets, Magnetic Needles, Microscopes, Telescopes, Drawing Instruments in Cases, Magic Lanterns, Air Pumps, Electrical and Magnetic Apparatus, &c., &c.
McALLISTER & BROTHER,
1 194 Chestnut st., Philadelphia.

GREAT WESTERN MACHINERY AND PATent Agency.—E. E. ELLSWORTH having disposed of his interest in the firm, the business hereafter well be conducted under the firm and style of DAVID RICHARDS & CO. We are prepared to sell all kinds of valuable improvements and machinery throughout the United States. For further information address
DAVID RICHARD & CO.,
51 6* No. 64 Randolph st., Chicago, Ill.

THE NINTH ANNUAL EXHIBITION OF THE Maryland Institute for the Promotion of the Mechanic Arts will be opened at the Institute's spacious hall, Baltimore, on Wednesday, Oct. 1st, and continue to Oct. 29th, 1856. Goods for exhibition and competition will be received at any time prior to Friday night, Sept. 26th, after which for exhibition only, except such as the Committee shall be satisfied were dispatched in time to have reached the Hall by that day, but failed to do so from unavoidable detention. The co-operation of the manufacturers, mechanics, artists, and the community generally is respectfully solicited. Circulars embodying the regulations and blank applications for space, with all other information, will be promptly furnished by application to John S. Selby, Actuary of the Institute.
JOSHUA VANSANT,
514 Chairman of the Exhibition Committee.

NO. 1.—$800,000. Valuable to everybody. A few weeks ago CHARLES BRADFIELD, of Philadelphia, opened a new Agricultural Implement Store at Fifth and Chestnut streets. One spacious room he appropriated entirely to new inventions. See below.

NO. 2.—Inventors, Patentees, &c., were all cordially invited to place their models here, free of charge, and the Philadelphia papers say there is already six to eight hundred thousand dollars worth of patents in this room, and visitors from all parts of the world visit there to see them. 51 4*

1000 YOUNG MEN for big wages. Honest, easy, and sure. Send stamp to Box 533, Detroit, Mich. 51 2*

THE PATENT DECISION—To the Editors of the Scientific American:—The statement in your paper of this morning in regard to the verdict of the jury in the case of George Page *vs.* Georgia, is a perverted one. It is true that the verdict was in favor of the defendant, but not upon the ground stated in the Elmira Advertiser, which you copied. On the first ballot of the jury there were 7 for the plaintiff and 5 for the defendant.—The jury then proceeded to take up each question separately: First, they passed upon the question of priority of invention, and decided in favor of plaintiff, George Page. The next question was, Did the defendant infringe the patent? Upon this question the jury stood 8 for plaintiff and 4 for defendant, and so stood until 5 o'clock in the morning, and ultimately brought in a verdict for defendant, upon the testimony of one of the witnesses for defendant, who swore that he had tended the mill from the time it started, and that it never had end-play. And as this formed the essence of the infringment, and it was not proven by the witnesses of complainant that the mill had been worked with end-play, though the fact is notorious that it had been so worked, the jury found for the defendant, though they unanimously decided that the priority of invention belonged to George Page, thereby sustaining the validity of his patent.
GEORGE PAGE & CO.,
Baltimore, August 2d. 50 4

WOOD BENDING APPARATUS.—Patented March 11th, 1856, for bending plow handles. carriage, chair, boat, ship timbers, &c. This apparatus is simple and inexpensive; can be constructed by the most ordinary mechanic, and operated by hand or power equally well. Apparatus constructed to order and rights to use the same for sale. Address, JOHN C. MORRIS, No. 113 Mill st., Cincinnati, O., or R. GRIFFITH, Troy, N. Y. 50 2*

A NEW AND SCIENTIFIC INVENTION—Dr Cheever's Galvano-Electric Regenerator. Patent issued Jan. 15th, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to DR. J. CHEEVER, No. 1 Tremont Temple, Boston 51 4*

ALEXANDER'S COMPOUND Parallel Sawing Machine, for making lath from the slab or board cross-cutting, ripping, and sawing miter, all combined in a cheap, simple and compact manner, is illustrated in No. 50, Scientific American. Sash factories, cabinet shops, carpenter shops, etc., should have these machines. Price $60. Country and State rights for sale. Address THOS. J. ALEXANDER, Westerville, Franklin Co, Ohio. 50 5*

TWENTY-EIGHTH ANNUAL FAIR OF THE American Institute of the city of New York at the Crystal Palace.—This magnificent and spacious building will be opened for the reception of Goods from Monday the 15th, until Saturday the 20th of September. Heavy goods and articles from a distance will be received and stored in the Palace on and after the 1st of September.—Premiums—consisting of Gold, Silver, and Bronze Medals, Diplomas, &c.—will be awarded on the recommendation of competent and impartial judges. The Cattle Show will be held on Hamilton Square, a beautiful plot of ground of ten acres, granted by the Corporation of the City of New York for that purpose, on Tuesday, Wednesday and Thursday, the 14th, 15th, and 16th days of October. The Managers would impress upon exhibitors the necessity of giving immediate notice of the space they wish to occupy, and those exhibiting machinery requiring power, the amount. From the numerous applications already made, the Managers find it necessary to make further provision for steam power. Communications addressed to Wm. B. Leonard, Corresponding Secretary, will meet with particular attention. Circulars containing full particulars can be had on application at the office of the American Institute, 351 Broadway, New York.
GEO. F. NESBITT, Chairman.
John W. Chambers, Secretary. 49 3

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. New York Belting and Packing Co., JOHN H. CHEEVER, Treasurer, No. 6 Dey street, N. Y. 48 10*

PAGE'S PATENT CIRCULAR SAW MILLS with Steam Engine and Boiler, on hand and for sale for $1500, at Schenck Machine Depot, 153 Greenwich st. New York. A. L. ACKERMAN. 49 10

INGERSOLL'S IMPROVED PORTABLE Press for Hay, Cotton, Tobacco, &c.—A silver medal for which was awarded last fall at the Fair of the American Institute, and also at the Fairfield County Fair in Conn. On account of the cheapness, compactness, portability and great power it is exactly adapted to the wants and means of every farmer and planter, and is believed to be far superior in every respect to any other machines of the kind now manufactured. See Sci. Am. Vol. XI, No. 30. Circulars, cuts, &c., descriptive of the machine can be had on application to the Farmers and Mechanics Manufacturing Co., Green Point, (Brooklyn) L. I. 48 4*

VANFLEET'S PLANING MACHINE—Important to Builders, Dealers in Lumber, Car Manufacturers, &c.—This machine does not take half the power that the Woodworth Planer does, and is applicable and practicable for horse power. For rights and machines address. D. C. HENDERSON, Sandusky, O. 48 4*

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM BURDON, 102 Front st., Brooklyn. 41 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 41 tf

WEISSENBORN'S PATENT INCRUSTATION Preventer.—Among the testimonials to the great success of this invention, read the following from William Burdon, 102 Front st., Brooklyn:—"I am perfectly satisfied with its operation. I believe it is the only machine yet invented that will entirely separate lime and other impurities from the water, when using hard water." In addition to this, it is the best water-heater, and a superior condenser. All parties are warned against infringements on the patent. STEWART KERR, Agent,
47 5eow 17 Broadway, New York.

H. WELLS & CO., Florence, Hampshire Co., Mass.—Are at all times prepared to fill orders for any size (single or double) of Well's Patent (Improved) premium Circular Saw Mills, which take the lead of all other mills in market for manufacturing lumber. Also Morrison's Shingle Machines, which rive, shave, and joint perfectly, 60 shingles per minute—Self-Setting, Shingle, and Lath Sawing machines, capable of sawing 1000 shingles per hour, or 4000 lath per day. Cuts, and List of Prices sent by mail when desired. 45 6teow

KENTUCKY MECHANIC'S INSTITUTE—The Fourth Annual Exhibition will commence, in Louisville, on Sept. 30th. 1856. Gold silver, and bronze medals, and diplomas will be awarded for superior articles, and special premiums for the most meritorious.—Competition is invited from every part of the Union. The Hall will be ready for the reception of goods on Sept. 18. Articles for exhibition only admitted free of charge.—Goods must be carefully packed and directed "Kentucky Mechanic's Institute, care of Carter and Jewett, Louisville, Ky." Persons applying for space or desiring further information, will address D. McPHERSON, Secretary of the Exhibition Committee. 45 4*eow

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 27 e3w

CIRCULAR SAWS—We respectfully call the attention of manufacturers of lumber to the great improvements recently introduced in the manufacture of our Circular Saws. Being sole proprietors of Southwell's patent for grinding saws, we are enabled to grind circular saws from six inches to six feet with the greatest accuracy and precision. The impossibility of grinding a saw without leaving it uneven in thickness has always been acknowledged by practical saw makers. This causes the saw to expand as soon as it becomes slightly heated in working. When this takes place the saw loses its stiffness, and will not cut in a direct line. We will warrant our saws to be free from these defects; they are made perfectly even in thickness, or gradually increase in thickness from the edge to the center, as may be desired. As there are no thick or thin places. the friction on the surface of the saw is uniform, consequently it will remain stiff and true, and will require less set and less power. Will saw smooth, save lumber, and will not be liable to become untrue. This is the oldest establishment now in existence for the manufacture of circular saws in the United States, having been established in the year 1830. Orders received at our Warehouse, No. 48 Congress st., Boston.
44 13* WELCH & GRIFFITHS.

KNITTING MACHINES—Circular and straight knitting machines of all sizes and gauges on hand and made to order. WALTER AIKEN, Franklin, N.H.
46 8*

PAGE'S PATENT PERPETUAL LIME KILN, will burn 100 barrels of lime with three cords of wood every 24 hours; likewise my coal kiln will burn 150 bushel with 1 tuh bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
45 26 C. D. PAGE, Rochester, N. Y.

NORRIS WORKS, Norristown, Pa.—Inglis, Carson & West, Iron and Brass Founders, Machinists, Boiler Makers and Steam Engine Builders—Manufacture Cornish Pumping Engines of an improved construction for mines and Water works, of any capacity. All kinds of Mining Machinery, Sugar Mills, Propeller Engines for Canal Boats, Blowing Cylinders, and all heavy machinery required in the Engineering business generally.
ANDREW INGLIS,
RICHARD R. CORSON,
43tf JOHN WEST.

CIRCULAR SAW MILLS—The subscriber has on hand, and is constantly manufacturing those celebrated mills with saws from 30 to 80 inches diameter, adapted to manufacturing most kinds of lumber, and warranted to give satisfaction. For prices, &c., address W. HERRICK, Northampton, Mass. 49 8*

BARREL MACHINERY—CROZIER'S PATENT is unrivalled in point of quality and quantity of work performed, and may be seen in constant operation at the Barrel Manufactory of the undersigned. For rights and machines address WELCH & CROZIER,
43 18* Oswego, N. Y.

TO CAR BUILDERS—For Sale, one new Upright Boring Mill for boring car wheels. Maker's price $600, will be sold for $300 cash. Address GEO. S. LINCOLN & CO., Hartford, Ct. 43tf

FOR SALE—One second-hand 7 ft. power Planing Machine, made by the New Haven Manufacturing Co. Cost $500, will be sold for $300 cash. Has been used only about four months. Also an upright drill by the same makers. Cost $90, will be sold or $40 cash. Address GEORGE S. LINCOLN & CO.,
47 tf Hartford, Conn.

BOILER FLUES—All sizes and any length promptly furnished by JAMES O. MORSE & CO., No. 79 John st., N. Y. 51 3mos

WROUGHT-IRON PIPE—Plain, also galvanized inside and outside, sold at wholesale by JAMES O. MORSE & CO., No. 79 John st., N. Y. 51 3mos

FORBES & BOND, Artists, 89 Nassau st, N.Y., Mechanical and general Draughtsmen on wood, stone, &c.

THE NEW YORK DAILY SUN for $2 a year. The miracle of the present age is accomplished by the Publisher of the New York Sun, in furnishing subscribers in clubs of thirty or more with the daily paper by mail for $2 a year. The Sun commenced in 1833; is the oldest, as well as the cheapest of all the cheap daily newspapers. It contains the latest news to be had by telegraph, mail, or express—is independent on all subjects, and has for its platform "Common Sense." Club rates—payable in advance, 5 copies one year $16·50; 10 copies $30; 15 copies $41·25; 20 copies $50; 25 copies $56·25; 30 copies $60. Single copies $4 a year. Papers to be sent in one wrapper, and only by mail, and to be directed to one person only. The postage on the Daily Sun within the State of New York is only 78 cents per year, and only $1·56 to any other part of the United States. Specimen copies sent gratis on application. Letters (always post paid) to be directed to MOSES S. BEACH, Sun Office, New York City. 37 tf

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horse powers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
LOGAN & LIDGERWOOD,
13 1y* 9 Gold st., N. Y.

FILMER & CO., Electrotypers, and Manufacturers of Electrotype Materials, 128 Fulton st., N. Y. Molding Presses, Batteries, Cases, Backing Pans, Shaving Machines, Metal Kettles, Planes, Blocks, Building Irons, etc., etc., on hand, or furnished at short notice, and at moderate charges. Adams' Improved batteries and black-lead machines also for sale. 23 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 33 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS, Office for sale of rights at 27 State street, Boston, and Lowell, Mass, 45tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co New Haven, Conn. 19 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 31tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 41 tf

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Science and Art.

Improving Iron.—Nickel.

Many persons entertain the opinion that pure iron is superior for use to an alloy of it. This is a great mistake. Pure iron is unfit for use; it is soft—not so strong as an alloy of it, and it cannot resist the action of the atmosphere. Pure iron reduced to very fine powder, when thrown into the atmosphere, takes fire, on account of its great affinity for oxygen, and it is soon reduced to an oxyd (rust.) Unless iron contained some other ingredient, it could not be employed for forged or cast-iron work. Cast iron resists the action of the atmosphere (is not liable to rust) far better than wrought iron or steel, simply because it contains more carbon.

It is true that there are some substances generally found associated with common iron, such as silica and sulphur, which are adulterations, and injure its useful qualities; but then there are other substances, which, when combined with it, improve its character for strength, and capacity to resist the action of the atmosphere. Iron containing a small portion of carbon, copper, zinc, nickel, chromium, or cobalt, is stronger than when pure and is not so liable to rust.

Owing to the abundance of iron scattered over and combined with the earth's crust, and owing to the facility with which it can be molded, forged, and welded, it is really the most useful, as it is the most generally used metal in the arts. The method of alloying it with carbon, and rendering it (in the form of steel,) the strongest and hardest of metals, is well known; but steel rusts rapidly by the affinity which it has for oxygen, when exposed to a moist atmosphere. Could wrought iron be made capable of resisting the oxydizing effects of the atmosphere, and also made stronger, it would be a grand achievement. The way to do this is known.

An alloy of iron and nickel is very ductile and strong, and almost proof against rusting. Could nickel be obtained so cheap, that only about from 2 to 6 per cent. of it could be combined with our common iron, the latter would be rendered far more useful for all wrought-iron work exposed to the atmosphere. The discovery of rich nickel ores in our country would be of great consequence in tending to improve and advance the useful arts, by using it only to alloy iron, not to speak of its value as a useful metal for other purposes. The most productive ores of nickel are those of Germany; and its early use in that country, as an alloy of copper, acquired for it the name of German Silver. It is found at Chatham, Conn., in gneiss, but it has been mined there with only moderate success. Owing to the vast extent of the metaliferous rocks of the United States, we are of opinion that sufficient attention has not yet been directed to the discovery of nickel ores. In the copper regions of Lake Superior, and other parts of our country, we believe that rich nickel ores exist, and await to reward indefatigable scientific and observing mineral explorers.

A new African Grain.

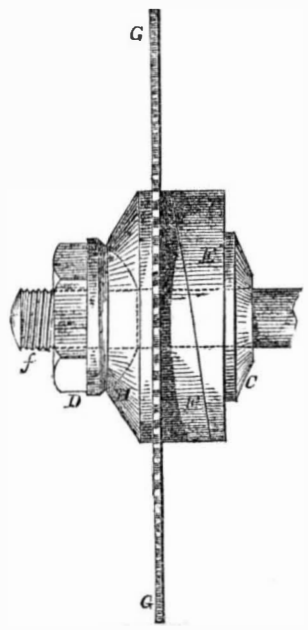
A grain called the "fundi," cultivated in some of the districts of the colony of Sierra Leone, has lately been described in *Chambers' Edinburgh Journal*, and brought to the notice of European agriculturists for the first time. It is a slender grass, with digitate spikes, and grows to the hight of about eighteen inches. The ear consists of two conjugate spikes, the grain being arranged on the outer edge of either spike, and alternated; the grain is attached by a short peduncle to the husk, from which it is easily separated. The grain, which is heart-shaped, and about the size of mignonette seed, is covered by a thin fawn-colored membrane, and when freed from this membrane is whitish and semi-transparent. It is highly glutinous, and has a delicate flavor, between that of rice and kiln-dried oats.

When ripe it is cut down, tied up in small sheaves, and placed in a dry situation; for, if allowed to remain on the ground and to get wet, the grains become agglutinated to their coverings. The grain is trodden out with the feet, and is then parched or dried in the sun to allow of the more easy removal of the outer membrane in the process of pounding, which is performed in wooden mortars. It is afterwards winnowed with a kind of a cane fanner on mats.

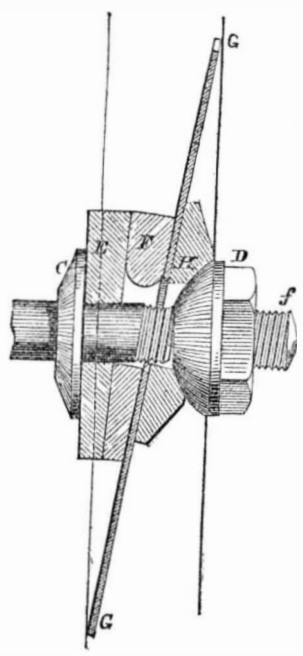
The Europeans and negroes connected with the colony generally stew it in a close saucepan, with fowl, fish, or mutton, a small piece of salt pork being added for the sake of flavor. This is said to make a very good dish. Sometimes it is made into puddings, and eaten either hot or cold with milk. The grain appears to be quite as delicate as arrow root, while it possesses a more agreeable flavor than sago, potato starch, and other similar preparations.

English Patents.

Highfield and Harrison's Adjustable Circular Saw.—This invention consists in securing a circular saw to its spindle in an oblique direction, so as to make a saw of the common construction to cut grooves or rebates of any required widths. This is effected in the following manner:—



Between the saw, G G, and collar, C, on the spindle, are two beveled washers, E F, each capable of being turned round independently of the other; and on the opposite side is a plain washer, H, having a concave recess for receiving a convex nut, D, which screws on to the end of the spindle, and secures the saw firmly thereto. The whole is so arranged that by changing the relative positions of the two beveled washers, E and F, a surface more or less oblique with the axis of the spindle, is presented for the saw to be screwed against. The obliquity of the saw with the axis of the spindle may be varied at pleasure, and grooves or rebates of various widths cut into the wood submitted to its action.

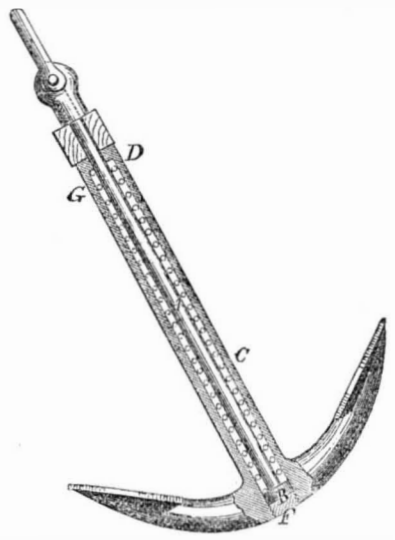


This is a most ingenious contrivance, and will save the great expense of having saws made to the thickness of the rebate required.

The invention has been patented by Mr. Henry Laxton, as a communication from Messrs. Highfield and Harrison, of the United States.—[London Civil Engineer and Architect's Journal.

[The above is a very good arrangement for what is known as a drunken saw; but it is an old invention here.—Ed.]

Ruston's Improved Anchor.—This invention



consists in giving elasticity to the shanks of anchors, as shown. A is the shank of the anchor, consisting of a rod of metal, on the lower end, of which a head or shoulder, B, is formed. C is a metal tube, in which the shank is enclosed, the tube being contracted at top so as to form the shoulder, D. A helical or coiled spring is situated upon the shank, and occupies the space between the shank and the tube, the spring bears at its lower end against the shoulder, B, and its upper end bears against the shoulder, D. The shank, A, is introduced into the tube, C, at the bottom, and the lower end of the tube is afterwards closed by a plug, F.

A washer of india rubber or other elastic substance is placed at G, the upper part of the shank, so as to fit the tube, C, tightly, and prevent water gaining access to the spring. The stock of the anchor is made separately from the tube, C, and is attached thereto by sliding it on the upper square part, and afterwards securing it by a cotter or otherwise. A swivel link is connected to the top of the rod, A. As the cable is attached to the rod A, and the arms of the anchor to the tube, C, the anchor is capable of lengthening by the application of any force greater than that of the spring, and the lengthening power in the anchor peculiarly fits it for resisting sudden strains.—[London Engineer.

A Subterranean Reservoir.

A short time since, while the workmen at the Blue Ridge Tunnel, Va., were digging, a vast stream of water burst forth and flowed out of the tunnel. An eye-witness states that the head of the stream was at least ten feet high, and that it swept carts and barrows before it like chaff. The stream gradually subsided, and was low enough at three P. M. to allow us to make a hasty survey of its cause. It seems that there is in the middle of the mountain an immense cavern or pocket, in which water from the melting snow has been deposited for years, and that the line of the tunnel tapps this cavern near its center. The cavern is of immense extent, and will save the State a good deal of money, since nature has opened a road through near three hundred feet of solid rock. This will expedite the completion of the tunnel greatly. Such subterranean reservoirs are the sources of the mountain springs, which supply our creeks and rivers with water during dry weather.

A Manufacturer made a Peer.

England is fast progressing in Democracy and sound policy. The Manchester *Guardian* states that Mr. Strutt, a manufacturer, has been created a peer, under the title of Baron Kepler. This is the first mill-owner who has been created a Peer, and is a new sign of the times in England, as it marks the surrender of feudalism to industry. It is something for those who claim to be the descendants of the mailed barons to receive into their number and order a man who has made a fortune with spindles and looms, and who still pursues the same calling.

The House of Peers is more democratic than many may suppose. Lord Lyndhurst is the son of a portrait painter, and Lord Campbell, Chief Justice of England, was once a poor man, and the reporter of a newspaper.

Clarifying Lard Oil for the Hair.

To every twenty pints of lard oil add one of alcohol; place them in a clean glass vessel, and shake them frequently for about two days, after which allow them to stand until they have become quite clear, and a sediment has fallen to the bottom. Pour off the clear and use it for hair oil. It may be colored a light purple with alkanet root, and also scented with the essential oil of lavender, rosemary, bergamot, &c. Maintaining the same proportion of parts by measure—1 of alcohol to 20 of lard—a pint of the latter may thus be clarified as well as twenty.

Mosaic Gold.

The sulphuret of tin heated with sulphur and sal-ammoniac forms mosaic gold, which is much used as a bronze powder.

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